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ABSTRACT

The Texas Automated Student and Adult Learner Follow-Up System was developed as part of a larger effort to improve and coordinate the delivery of education and training of a skilled work force. The primary task of the Follow-Up System in Program Year 1993-94 was to obtain outcome information on the former students and participants of the work force development programs. The process for obtaining outcomes data consisted of three phases: seed record extraction, record matching, and an employer survey. Results for public education were in the form of a prototype report card for six pilot districts selected from volunteers. These report cards indicated employemnt outcomes and continued pursuit of education. Labor market results were fairly consistent across the pilots. A pilot study for the Job Training Partnership Act system obtained follow-up data through the automated record linkage technique and compared results to those obtained through the traditional telephone survey techniques by Texas A&M University. The comparison revealed nearly identical results. For the third consecutive year, automated follow-up documented successful outcomes for 85 percent or more of the community and technical college cohorts studied. Recommendations for the future were to expand the breadth and depth of coverage and degree of automation. (Appendixes include the following: record linkage technique; file layouts; sample data sharing agreement; guides for using follow-up data; 16 endnotes; and a glossary.) (YLB)

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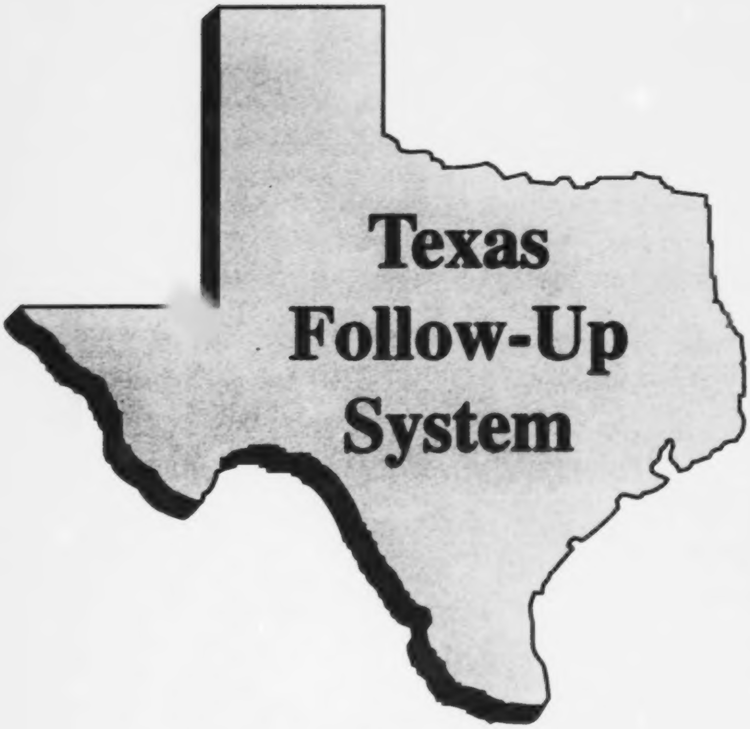

Texas Follow-Up System

Automated Student and Adult Learner Follow-Up Study

Final Report

Contract #44140066

August 1994

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AUTOMATED STUDENT AND ADULT LEARNER FOLLOW-UP SYSTEM

Final Report
for
Program Year 1993-94

submitted to

Texas Higher Education Coordinating Board
acting as fiscal agent for the
Tri-Agencies for Quality Work Force Planning

in partial fulfillment of
Special Projects Grant #44140066

by

Texas State Occupational Information Coordinating Committee
Richard Froeschle, Executive Director
Marc Anderberg, Follow-Up System Director

August 15, 1994

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EXECUTIVE SUMMARY

The Texas Automated Student and Adult Learner Follow-Up System is an integral part of a larger effort to improve and coordinate the delivery of an education and training of a skilled workforce. The Texas Workforce and Economic Competitiveness Act of 1993 (Senate Bill 642) mandates the use of outcomes information collected by the follow-up system in planning and evaluating federally funded programs and services offered by the state's workforce development partners. Parts of the mandated follow-up system were in place when Senate Bill 642 was adopted. The Texas State Occupational Information Coordinating Committee (SOICC), as the designated follow-up entity, provided the newly created Texas Council on Workforce and Economic Competitiveness (TCWEC) with technical assistance based on the workforce development partners' collective wisdom as well as information about best practices used in other states. In their effort to transition from a collection of disparate agency/program follow-up practices to a fully mature, integrated and comprehensive statewide system, the SOICC balanced public demands for accountability in education and training with the need for practitioner acceptance of the system as fair, reasonable and worthwhile.

While the SOICC reports directly to the TCWEC, the Automated Student Follow-Up System was funded in Program Year 1993-94 by three of the state's workforce development partners: the Texas Higher Education Coordinating Board, the Texas Education Agency and the Texas Department of Commerce. Funds were drawn from federal allocations of dollars to the state under the Carl D. Perkins Vocational and Technical Training Act and the Job Training Partnership Act. Follow-up activities were governed by a management team from those three agencies and operated upon the advice of practitioners. Five site based committees were formed across the state to solicit practitioner advice. Motions and resolutions were carried forward from the site-based committees to a Steering Committee whose representation was balanced geographically and by constituency.

The SOICC coordinated record-matching activities to obtain outcome information and managed an employer survey subcontract to obtain more detailed occupational employment information. (The employer survey represented a nearly tenfold increase in the number of records processed compared to the prior year's subcontract.) The SOICC provided baseline analysis of follow-up data and facilitated distribution of data files to service providers. The SOICC rendered technical assistance to the TCWEC, tri-agency personnel, and local service providers to foster better understanding and more widespread use of follow-up information in a process of continuous program improvement.

In addition, the SOICC collaborated with agency personnel and practitioners to improve analytic tools and information report/display formats that make the data more meaningful and useful. The SOICC strove for consensus in resolving technical differences among tri-agency evaluation practices and procedures by engaging practitioners in dialogues at association meetings, workshops and a statewide conference. Upon the advice of practitioners, the SOICC negotiated additional data sharing agreements to increase the system's capacity to document a wider range of successful outcomes.

As a result of these efforts, the follow-up system accomplished two primary objectives. Services to existing customers (the tri-agencies) were improved. As current service improved, the follow-up system became more attractive to the state's other partners in workforce development: the Texas Employment Commission and the Texas Department of Human Services. The achievements of the Texas follow-up system were brought to the attention of administrators and practitioners in other states and were influential in shaping common approaches to shared problems. Thus SOICC activities under the 1993-94 grant moved the follow-up system closer to the model envisioned for the state in Senate Bill 642 while also providing coordination with out-of-state activities to ensure a greater degree of cross-state comparability.

OVERVIEW

Automated student and adult learner follow-up is designed to answer a fundamental question: *"What happens to students and participants after they receive publicly funded education and training?"*. The question is important to divergent interested parties for a variety of overlapping reasons.

- Taxpayers want to know and deserve to get a reasonable return on their investment in education and training programs. This perspective is reflected in the federal *Government Performance and Results Act of 1993* (hereinafter, GRPA).

- Public officials, employers and economists perceive the connection between availability of a competent workforce and a community or region's ability to compete in a global economy. This perspective is reflected in theoretic and academic literature such as *America's Choice: high skills/low wages*[1] and Ray Marshall and Marc Tucker's *Thinking for a Living*.[2]

- To respond to public demands for accountability in education and training, legislators and administrative agency personnel need documentation of successful outcomes to evaluate compliance and policy impact. This perspective is reflected in the federal call to outcomes reporting requirements in the Carl D. Perkins Vocational and Technical Education Act (Perkins) and the Job Training Partnership Act (JTPA) and in this state's Workforce and Economic Competitiveness Act (SB 642).

- If planners are to evaluate and constantly improve programs, they need reliable and valid outcome data rather than marketing/recruiting hyperbole, speculation or assumptions about what "***ought*** to work in theory" or non-representative anecdotal information. This sentiment is reflected in:

  the state's substantial investment in development, distribution, technical support for and reliance on SOCRATES, the automated planning model from the Texas State Occupational Information Coordinating Committee (SOICC).

  administrative rules and guidelines such as those issued by the Texas Department of Commerce (TDoC) to JTPA Substate/Service Delivery Areas (SSAs/SDAs) for Title II and Title III programs;

  institutional self-study guidelines for accreditation reviews by the Southern Association of Colleges and Schools (SACS);

  institutional effectiveness guidelines issued by the Texas Higher Education Coordinating Board (Coordinating Board) and the "VOC116R" and "CB116" reporting requirements for public education and higher education established respectively by the Texas Education Agency (TEA) and the Coordinating Board.

- If training providers and professional educators are to keep the curriculum engaging and responsive to labor market demands, they need a constant source of detailed feedback about how well they served their students in general and how effective they were in tailoring delivery to the needs of certain special populations. This sentiment is reflected in the creation of "Institutional Effectiveness", "Institutional Research" and "Quality Assurance" offices within secondary and postsecondary educational institutions. It also is evident in the widespread attention given to these topics at association meetings, conferences and workshops organized by education and training professionals.

- As students and training program participants stand on the brink of making important career decisions, they need hard evidence that selection of a coherent sequence of courses will provide a viable pathway to promised or expected successful outcomes. Such successes are best predicted by the education and training providers' track records and the results achieved by those who preceded the current cohort along each alternative pathway. These sentiments are reflected in the Student Right to Know Act and Campus Security Act of 1990 (Public Law 101-542, hereinafter "*Right to Know legislation*") and in the state's investment in the SOICC's development, distribution and technical support for Texas CARES (an automated career information delivery system), Improved Career Decision-Making seminars, the Career Information Hotline, and publications.

Regardless of focus, all interested parties need answers to the same central question. Getting answers would be easy if education and training programs were small and their graduates displayed little geographic mobility or employment-skills portability. A telephone call or a mailed survey to a former student/participant's last known point of contact would likely reach the appropriate person and elicit a response.

However, program enrollments have mushroomed, average job tenure with a single employer has decreased, and the workforce has become more mobile geographically at the same time as the demand for outcomes data from all quarters has increased and analyses have extended to include ever increasing timeframes in definitions of "long term" success. Moreover, as the proliferation of providers intensifies competition for scarce education and training dollars, programs are increasingly likely to be judged under the public microscope by not only the measures they devised and applied to themselves but also by comparisons to other programs with similar but not identical missions and subject to somewhat different measures. The demand for hard evidence of accountability and *comparative* performance is often overwhelming -- beyond the resources available to education and training providers for data collection and the requisite analysis to turn raw data into useful information.

Texas has devised an automated student and adult learner follow-up system to meet the information demands and needs of interested parties.

- By using cost-effective record matching techniques to link to administrative data bases constructed and updated constantly for other purposes, it capitalizes on other mandated public expenditures for data collection and program administration.

- By integrating services through a central administrative entity, the follow-up system eliminates duplication of effort among education and training-providers while reducing the burden on data providers.

- By housing integrated services in a neutral, independent entity, the follow-up system assures greater objectivity in data collection while building consensus for the fair comparisons of performance data on a level playing field through such activities as:

  establishing common performance-data definitions applicable across the state's workforce development partners;

  collecting data through a standard methodology in a shared timeframe;

  creating standardized report formats that make cross-program comparisons easier and more meaningful; and

  developing evaluation tools which strike a balance between the expertise and experience (but unavoidably self-interested orientation of education and training providers) and the hard-nosed "bottom-line" market mentality appropriate to those who hold them accountable.

- By providing continuity of administration, the follow-up system builds historical files to better determine the long term trends which impact program delivery and effectiveness and from which realistic yet ambitious performance standards can be derived.

- By bringing together professional staff, subcontractor(s) and advisory committees of practitioners and data users, the follow-up system provides the technical assistance necessary to translate raw data into user-friendly information tailored separately for the needs of administrators/planners, training providers, career guidance counselors/case managers, parents, students/participants, economic development specialists, employers, and the general public.

BACKGROUND

1) *Automated Student and Adult Learner Follow-Up as a Key Element in a Collective Effort to Improve and Coordinate the State's Workforce Development Programs*

By revising the *State Master Plan for Career and Technical Education* (Master Plan) in 1993, the Coordinating Board, TEA and TDoC committed to improving programs for educating and training the workforce, coordinating efforts, and for holding themselves accountable for a reasonable return on the investment of public dollars therein. Revision of the Master Plan was not the first cooperative undertaking of the tri-agencies. Beginning with three funded pilot projects in 1987-88, the tri-agencies supported creation of regional Quality Work Force Planning (QWFP) Committees. These committees bring together public and private sector representatives to plan the integrated delivery of career and technical education and training and to eliminate unnecessary duplication of programs. They work to ensure that adequate resources will be shifted to programs crucial to a region's prosperity as demands for occupational employment change and as new high skill/high wage occupations emerge. They also promote dialogue between employers and training providers to ensure that the career and technical education curriculum will produce skilled workers who can demonstrate competencies to world class standards.

Cooperation and coordination is driven both by a common desire to improve the state's economic competitiveness through workforce development and by demands for accountability in education. The *Workforce and Economic Competitiveness Act* (Senate Bill 642, May 1993) is the most recent expression of those dual concerns. With passage of SB 642, Texas is moving rapidly toward implementation of a statewide, comprehensive automated student and adult learner follow-up system.

Prior to passage of that Act, the tri-agencies (both jointly and individually) funded the regional QWFP Committees and enhanced their effectiveness through various capacity building efforts. An automated regional planning model, SOCRATES, was developed, continuously improved, installed and supported at host-sites to guide QWFP Committees and each region's education and training providers in targeting critical demand occupations. The tri-agencies supported a clearinghouse that facilitates exchange of critical information, ideas and innovations. The tri-agencies also promoted the concept of Total Quality Management and a model for its implementation in the education and training system: site-based management. More recently, the tri-agencies agreed to support joint development of:

- an automated career information delivery system;
- a process for skill standards identification; and
- model/demonstration projects for one-stop delivery of education and training services.

Tri-agency implementation of the statewide Tech-Prep High School and Associate Degree initiative is noteworthy evidence of that cooperation and commitment across all levels. Development of Tech-Prep programs was funded largely with federal dollars under the Perkins Act. State level coordination was necessary in setting core standards and measures, in removing barriers to streamlined articulation and in cataloging equivalencies across various coherent sequences of courses. Identifying significant regional occupational employment demands, negotiating specific articulation agreements, curriculum development, and securing employer buy-in to specific Tech-Prep degree programs are the responsibility of regional consortia.

Interagency agreements, coordinated planning, creation of regional forums, mutual endorsement of or willingness to test innovative ideas and formal approval of degree programs and training service contracts, however, are no guarantee of successful outcomes. These must be coupled with:

- a feedback mechanism that constantly monitors outcomes and translates data into meaningful information to drive program improvements;
- a process for revising, deactivating, or sunsetting programs that do not meet core standards;
- a means of identifying and promoting broader adoption/adaptation of exemplary programs, effective education and training materials, and successful delivery methods;
- a mechanism for constantly monitoring externalities – such as changes in the labor market, emerging technologies and economic conditions to anticipate concomitant employer expectations;
- a strategy to help students and adult learners form reasonable career expectations and access the most appropriate and effective education and training alternatives; and
- an accountability process that documents successful outcomes and demonstrates to policy-makers and taxpayers that the return on investment is reasonable.

A comprehensive statewide automated student and adult learner follow-up system is the ideal feedback mechanism to keep workforce development partners focused on continuous improvement. Such a system must be built carefully. The data collected must be valid and reliable. Secondly, the analysis and report formats must distill follow-up data into information that can be understood readily and unequivocally and translated into recommendations for program improvement. Lastly, the follow-up system must be cost-effective.

Significant program improvements can take place only at the local education and training delivery level. Unless follow-up information is available to ***and embraced by*** the education and training providers, it will have no impact on programs, will produce few benefits for students and adult learners and will make no significant contribution to economic competitiveness. If automated follow-up is feared as a punitive, externally imposed system or perceived essentially as a compliance reporting requirement, it will be given minimal attention at best – if not covertly resisted. In the long term, the cost-effectiveness of the follow-up system depends as much - if not more - on its wide spread acceptance as it does on the elegance and precision of its methodology.

The tri-agency funded Automated Student and Adult Learner Follow-up grant for Program Year 1993-94 was designed to cultivate widespread acceptance among all constituent elements while perfecting a standard methodology that is valid and reliable, can be applied consistently across the constituencies and which yields analyses that are useful. The statement of work, advisory structure and budget were designed to build a cost-effective follow-up system that will have a genuine impact on the economic competitiveness of Texas and the well-being of students and adult learners.

2) The Model: Building on the Experience of Automated Follow-Up for Higher Education in Texas

The follow-up system is built upon the collective wisdom of practitioners, administrators and tri-agency personnel. It measures factors that professional educators and trainers have defined *for themselves* as important indicators of successful performance. Core features of the automated follow-up system were developed over several years by the Coordinating Board in cooperation with progressive community and technical colleges and innovative individuals. It is effective in producing real change in the curriculum and delivery of education and training because community and technical colleges understand that the methodology is sound and because the system is perceived not as an externally imposed compliance requirement but as a system in which they provided substantial leadership in design for use in institutional effectiveness and program evaluation.

North Harris/Montgomery Community College (NHMCC), using Perkins funds, piloted the first automated record matching process for student follow-up in Texas in 1988-89. NHMCC constructed its own seed file for matching against the UI wage-records. (There was no provision in the NHMCC pilot for automating the identification of former students who continued their training at another institution of higher education.) Results from the match were used in NHMCC's self-study report for SACS accreditation review.

In 1989-90, Andersen Consulting, under a contract to the SOICC, reviewed available Texas data bases and procedures developed in other states - primarily Florida - for identifying labor market outcomes. Andersen Consulting's feasibility study recommended a three-phase plan for implementing an integrated statewide automated student follow-up system serving multiple constituencies through a central administrative entity.

On a voluntary basis, Brazosport College joined with NHMCC and 12 others community colleges during the 1990-91 program year to further expand and enhance the piloting of automated UI wage-record matching. Each college created its own seed files. The Coordinating Board eliminated error records, combined the files into a master tape and facilitated matching of those files against TEC's UI wage-records. Each volunteer college paid its *pro rata* costs for that matching. The Brazosport volunteer pilots recommended that seed files be extracted from the Coordinating Board's master enrollment files and that the higher education data base be included in the match as a means of identifying former students who transfer to continue their education and training.

Community and technical college interest in automated follow-up increased as the Brazosport Study volunteer colleges disseminated information about the process and explained the value of follow-up data. The University of Texas at Austin served under contract to the Coordinating Board to administer expansion of follow-up services to all community and technical colleges. The 1991-92 study matched seed files for all community/technical college graduates and non-returners against both the UI wage-records and the Coordinating Board's master enrollment files. Workshops and a statewide conference were conducted during the 1991-92 program year to ensure that administrators and institutional researchers understood both labor market outcome data and information about former students continuing their higher education elsewhere. These workshops and the state conference stressed the use of follow-up data in evaluating institutional effectiveness and shaping program improvements.

Rapid expansion of services to the community and technical colleges occurred because administrators and institutional researchers from volunteer colleges took the lead in informing their peers about the value of follow-up data. Because they realized, in the long run, that an automated record matching process would be the most cost-effective means of collecting data, participating administrators and researchers encouraged the Coordinating Board to allocate capacity building funds for a more comprehensive follow-up system. With the 1992-93 contract awarded to the Texas SOICC, these same individuals actively recruited volunteers to participate in piloting other follow-up activities: an employer follow-up survey, an adult vocational pilot, a public university pilot, a study of former high school 2+2 students, and voluntary participation by private universities.

Understanding and acceptance of automated follow-up has been promoted not only through Coordinating Board and SOICC sponsored workshops, conferences and regular channels of communication but also through peer-to-peer exchanges: for example, at the Texas Association of Institutional Researchers' annual conference (TAIR), at the Texas Association of Post-Secondary Occupational Education Administrators' semi-annual meetings (TAPSOEA) and through informal discussions among community and technical college representatives at Quality Work Force Planning committee functions (QWFP), Tech-Prep consortia meetings, or Perkins Committee of Practitioners' meetings.

The concept of follow-up is familiar to some administrators, planners and researchers in universities, public education and the Job Training Partnership Act (JTPA) system. However, understanding, commitment to and effective utilization of follow-up data do not seem as widespread in these constituencies as they are among community and technical colleges.

While university administrators appreciate the need to understand transfer patterns with community and technical colleges and/or other senior institutions, the value of labor market outcomes data is less clear to them – especially for their programs that are not occupationally specific. The follow-up system developed for community and technical colleges, therefore, must be tailored to accommodate the needs and interests of universities.

Local education agencies (LEAs) must report follow-up information on former vocational education students (VOC116 reports). Their reports are based on time/resource-consuming telephone and/or mail surveys which may be seriously flawed. Such surveys often suffer from low response rates, dependence on unverifiable self-reported behaviors and refusal of former students to give their consent to employment verification. Because they are of questionable validity and reliability, such follow-up data are seldom subjected to in-depth analysis. They carry little weight in the evaluation of and planning improvements for public education programs. A more effective feedback mechanism for improving public education programs can be developed as automated record matching reduces the costs of acquiring more reliable and valid information and as outcome information is explained in terms of other data elements already in the Public Education Information Management System (PEIMS).

The Texas Job Training Partnership Act (JTPA) system is required by the federal Department of Labor to conduct follow-up of former participants. The data collection costs exceed $330,00 per year and are funded with Service Delivery Area (SDA) administration dollars. Since there is a ceiling of 20% on the use of JTPA dollars at the SDA level for administration and since there are other functions competing for those scarce administration dollars, few funds are left for analysis of follow-up data at the SDA level in sufficient detail to guide program improvements. Use of follow-up data in the Texas JTPA system, therefore, is confined largely to compliance reporting and year-end allocations of incentive funds. As in public education, follow-up information will have more impact in the JTPA system if the costs of data acquisition are reduced and if SDA personnel learn to couple follow-up information with data elements in their Management Information Systems (MIS) to evaluate performance.

A comprehensive, statewide follow-up system (to include all the above constituencies) is envisioned in the Workforce and Economic Competitiveness Act (§2.09). It requires collection of sufficient data to draw inferences about the effectiveness of specific programs. Funds available under terms of the tri-agencies' 1993-94 agreement ($225,000) were not sufficient to achieve that level of detail for all three constituencies. Moreover, given the prior experiences with and involvement in various follow-up activities, the three agencies were not at the same level of technical development and constituent acceptance. ***Services and activities under the 1993-94 tri-agency contract were, therefore, designed to balance the disparate experiences and needs of the three agencies and their constituents with their common interest in moving rapidly into a fully integrated and comprehensive statewide follow-up system.***

Senate Bill 642, §2.09 implies that the SOICC build upon and enhance existing components to institutionalize a comprehensive and integrated follow-up system to serve all the state's workforce development partners under the supervision of the Texas Council on Workforce and Economic Competitiveness (TCWEC). Parts of the system envisioned in Senate Bill 642 were already in place. Transitioning to full, statewide implementation necessitates making existing components more productive while building capacity for constituencies not yet served. The 1993-94 follow-up grant was designed to help estimate the costs of and address issues associated with full-scale, high productivity implementation in subsequent years while building confidence among program administrators, educators and training providers, prospective students and participants, taxpayers, and employers in the products and services of the follow-up system. The Coordinating Board, TEA, and the TDoC each contributed $75,000 toward the transition costs for Program Year 1993-94.

In addition to targeted services, each constituency benefitted indirectly from follow-up services to the other two. For example, a substantial portion of Texas high school graduates pursue additional training at the state's public institutions of higher education and the JTPA system purchases off-the-shelf training from community and technical colleges for Title IIA and Title III participants. Follow-up information on former higher education students helps JTPA case managers and high school counselors provide better career guidance and referrals for eligible participants and students. As all three constituencies work toward a seamless education and training delivery system - as exemplified by Tech-Prep programs - sharing follow-up data will stimulate development of or improvements in agreements where desired levels of articulation have not been achieved. Therefore, steps were taken under the 1993-94 grant to transform the system initiated by community and technical colleges into a joint venture among three of the state's workforce development partners.

All three constituencies benefited from working through SOICC as a neutral, central administrative entity for automated follow-up. With SOICC's technical assistance, the JTPA system and public education avoided pitfalls encountered earlier by trial and error in higher education. Standardized data definitions and follow-up methodology - established through grassroots consensus building - made it easier to communicate and compare data across programs and agencies. The consensus-building approach engendered trust that follow-up data will be used in a consistent and even-handed fashion to improve programs across all three constituencies. In sharing resources to design a single follow-up system, each constituency avoided unnecessary duplication of effort. Effective programs were identified and information about them was disseminated to encourage emulation and adaptation.

By working through local committees, the SOICC enhanced the principles of site-based implementation of Total Quality Management. Confidence in and reliance upon the follow-up system is built from the bottom up through peer-to-peer (rather than authoritarian, top-down) communications.

In addition to building upon the prior work of the tri-agencies and the recommendations of practitioners, the Texas SOICC established communications over the years with the other state OICCs, the National OICC, the academic research community, and other states' follow-up entities. Through these contacts, common problems and pitfalls were identified; information about best practices also was shared. The SOICC, using its Follow-Up Steering Committee as a sounding board, forwarded out-of-state experts' recommendations for consideration in Texas. The SOICC also participated in joint planning of strategies in a concerted effort to secure federal action where necessary and to broaden consensus on methods and definitions that would result in the greatest possible degree of cross-state comparability of findings.

The intent in all these activities was not to concoct a follow-up system independently and externally impose it upon practitioners. Rather, the intent was to build upon the historical achievements and collective wisdom of the practitioners, resolve technical differences among the partners' practices, and blend in the experiences based on trial and error of other states' efforts. The intent was twofold:

- to move from demonstration status to a fully matured system capable of delivering comprehensive and integrated services to its current customer base; and
- to bring other workforce development partners (identified in Senate Bill 642) into the system.

3) Evaluating the Performance of the Follow-Up System

A vision of a fully mature system was developed based on practitioner opinions, both from within the state and from the SOICC's out-of-state advisors. A mature system was conceptualized as multi-dimensional. For each dimension, ideal performance levels were identified and compared to current practices or achievements to date. Strategies were then developed to move from current performance levels to the ideal on each dimension. Resources were too scarce to perfect the system in a single program year; therefore, activities under the 1993-94 grant were scheduled to make the most effective use of available time and resources.

The SOICC measures and assesses its performance in terms of progress made on each dimension. The chart on the next page lists the desired traits of a mature, comprehensive and integrated system on the right side. (Each dimension is explained in more detail in the following pages.) Practices as of the start of Program Year 1993-94 are located on each continuum. This chart serves as a point of departure for self-evaluation of the SOICC's performance under the 1993-94 grant, its concluding remarks about the follow-up system's achievements during the program year, and recommendations for future action.

System Attributes

Fledgling	Mature

Breadth of Coverage

	X		
Volunteer Pilot-Site(s)	Representative Sample	Relevant Population	Universe Plus Matched Sample

Degree of Automation

Improved speed and capacity - - >

	X	
Manual construction of seed records, traditional/ high-cost survey methods to obtain outcome information	Automated extraction; mix of traditional survey and record linkage techniques to obtain outcomes	Automated seed record extraction; automated match identifies all outcomes.

Depth of Coverage

X		
One shot case studies to address a single issue	Multiple snapshots addressing multiple research questions	Longitudinal, comprehensive

Tool Development

X		
Developed ad hoc; simple frequency distributions; easy to understand but having little explanatory power.	More complex tools; validated by practitioner opinion (potentially self-interested); but difficult for laypersons to use & understand	Sophisticated, empirically validated; process statistics developed to adjust for known sources of error/bias; user-friendly guides to turn data into information

Utilization

X		
Awareness limited to researchers and used largely by trained specialist	Used by program administrators; awareness grows among practitioners and "attentive publics"	Becomes part of general public knowledge and becomes salient element in their opinions about, selection of, and support for education and training programs.

Breadth of Coverage

System development usually begins with demonstration projects at volunteer pilot sites. A transitional system uses representative samples and statistical techniques to draw inferences about relevant populations. A more mature system provides follow-up on the entire relevant population ("universe"). A fully mature system approximates the classic experimental design by including studies of comparison groups that did not receive the services provided to participants.

Automated student follow-up started in Texas with a single volunteer community college district then grew to include 13 community and technical colleges. In the third year the University of Texas at Austin facilitated record matching for all community and technical colleges. In 1992-93, the SOICC continued the work begun by UT - Austin on behalf of the community and technical colleges. East Texas Sate University joined as the pilot for four year institutions of higher education. Leander High School joined as the public education (2+2) pilot. Four community and technical colleges submitted seed records on their adult vocational students. Breadth of coverage, therefore, is uneven among the tri-agencies with the Coordinating Board having more well developed practices.

Degree of Automation

Follow-up studies are traditionally conducted through telephone and mail surveys using contact and background information kept in manual filing systems. These tend to be costly and elicit low response rates. With low response rates come response-set biases. The error factor in follow-up of this sort is compounded when participants are asked to self-report outcomes. Non-automated follow-up requires manual data entry. Here again, the potential for error is increased. A fully mature system reduces effort and eliminates some potential for error on both ends by automating the generation (or extraction) of seed records and the documentation of successful outcomes.

Public entities collect a wealth of information for a variety of purposes. Some of the data are relevant to questions educators and training providers ask. Tapping into those data bases helps eliminate unnecessary duplication of effort by capitalizing on other entities' sunk costs in data collection. One expects the quality of the data and the coverage to be better than that obtained through traditional methods. Automation of the process eliminates several manual data entry steps. It also permits "edit check" programming to capture some errors.

The follow-up system currently mixes automated record matching and an employer survey. It matched seed records for former students against the Coordinating Board's master higher education enrollment files and the Texas Employment Commission's Unemployment Insurance wage-records. In addition, Jim Reed of the Texas Student Information System (TEXSIS) conducted employer surveys to obtain more specific data. (The employer survey is necessary because the UI wage-records do not contain occupational titles, hourly wages or work-site location data.) The SOICC also conducted negotiations to improve the breadth of coverage of record matching by gaining access to federal civil service, postal service and military enlistment data. Remaining gaps must be filled by gaining access to other administrative data bases. In increasing breadth of coverage, the degree of automation also increases.

As displayed atop the continuum, technical advances enhance automation by increasing the storage capacity, retrieval speed, cross-platform communications, and computational capabilities of computers while decreasing the run-time costs and providing an operating platform for developing more sophisticated and user-friendly tools. The system, however, is not fully integrated. The data bases tapped by the SOICC are not networked together. While seed record extraction, appending of outcomes data, and data analysis are done on high speed computers, physical transportation of data files is necessary at various stages in the process to facilitate record linkages.

Depth of Coverage

Automated follow-up originated as a one-time response to a SACS accreditation visit to North Harris/Montgomery Community College. Snapshots had to be retaken periodically thereafter because changing external factors significantly impact outcomes. As the knowledge base grew, researchers refined their questions to better understand the determinants of success. Over time, data from a number of snapshots increased. As the picture became more complete, more sophisticated questions arose. In particular, researchers want to identify the delayed effects and long term results of education and training. The ideal method for collecting follow-up data is a longitudinal design that tracks each cohort through multiple points in time. Longitudinal studies are better suited to answering more sophisticated and pertinent questions: e.g., for determining pre/post participation gains and for identifying the lagged (delayed) benefits of program participation. Moreover, other research indicates that our linear models of education, training and career path advancement may be inappropriate. Only with longitudinal data can we build a model with improved predictive ability.

Senate Bill 642 mandates longitudinal follow-up at the one, three and five year post-program intervals. To date, however, the SOICC is funded only to conduct studies at a single point in time for each cohort being tracked. To achieve maximum depth of coverage, the system will require more funds.

Tool Development

Frequency distributions answer the basic question, "What happened to former students and participants after they exit an education and training program?". Once researchers and administrators know what happened, they begin to ask: "Why?" "What worked?" "Did the program work better for some subgroups than for others?" "Under what conditions?" These questions require additional calculations and analyses: percentages, cross-tabulations, regression and analysis of variance techniques, for example. If something more sophisticated than a frequency distribution is needed, consensus on the appropriate calculation or tool(s) to use may evaporate. Something as seemingly simple as computing a percentage may lead to disputes over what belongs in the denominator and numerator. Service providers, realizing their programs may be effected by the way data are displayed and performance is measured, instinctively prefer calculations and techniques which put them in the best light. Consensus is restored through appeals (to professional objectivity and the bona fide desire of all to serve their customers well) based on evidence that refinements in analytic tools improved their reliability and validity. Over time, consistency in results and perceived fairness of the process build confidence in the tools. The tools themselves are validated (by investigating systematic sources of error and convergent validity techniques). Statistical adjustments can be developed to correct for known sources of error. Conscientiousness, objective empirical testing and professionalism contribute to the confidence others have in the tools constructed and, in turn, lead to the last (but most important) element in a mature system. That is, the data are transformed into information that can and will be used.

Utilization

In a fledgling system, only a limited number of people are aware of follow-up data. Specially trained researchers may know the data intimately but key administrators want it in an executive briefing/summary format, use it quickly for limited purposes, then move on to other work. Thus, performance data have tremendous untapped potential to effectively guide decision-making at a number of other levels: program planning, recruitment, career counseling, job placement, etc. Those who could benefit from access to and familiarity with follow-up data are either unaware of its existence or, if aware of it, have difficulty obtaining and deciphering it. As follow-up information is more widely distributed, more practitioners will appreciate its potential uses. Extensive technical assistance improves their understanding of the data and increases their confidence in them. With increased confidence comes the inclination to use the data to drive program planning and evaluation; with technical assistance comes the understanding necessary for their proper use.

In a fully mature system, pertinent information is distilled from detailed and sophisticated analysis. (The Coordinating Board, for example, uses follow-up data in its in its institutional effectiveness model and program evaluations.) The information is translated from technical language and jargon into easier to read yet meaningful summaries for distribution to the general public. It is used to explain how decisions were made and supported with hard evidence. Succinct report formats and graphics in hardcopy and electronic formats engage the "attentive publics" (i.e., concerned and interested citizens) who use the information to form judgments about the return they get for the investment of their tax dollars in education and training. As follow-up reports are more widely distributed and consumed, the environment in which education and training decisions are made becomes more rational. "Data dialogue" replaces expressions of vested interest, guesswork, reliance on selectively-reported or unrepresentative anecdotes, and/or marketing hyperbole in the decision-making process.

1993-94 PROGRAM YEAR GRANT ACTIVITIES

1) Funding

The SOICC was awarded a grant of $225,000 to operate the Automated Student and Adult Follow-Up System. TEA, TDoC, and the Coordinating Board each contributed $75,000 for system development and administration. Both TEA and the Coordinating Board contributed federal Perkins dollars; TDoC contributed JTPA Title IIA and Title III dollars. The Statement of Work and a line item budget were established in collaboration with the SOICC. Additional program income was raised through registration fees for three regional workshops and a statewide conference. Earned program income was spent on follow-up activities. Expenditures were governed by the Statement of Work, the budget, tri-agency and federal fiscal rules and regulations.

An employer survey subcontract was issued through the competitive bid process to Dr. Jim F. Reed (doing business as the Texas Student Information System or TEXSIS) in the amount of $101,927. The subcontract amount was later amended with the addition of $5,580 to ensure that the persistence level for the 1993-94 subcontract matched that provided in Program Year 1992-93. Copies of the budget, subcontract budget and subcontract amendment are provided in Appendix VIII.

There is a three year limitation on the use of Perkins dollars for state demonstration and capacity building activities. On July 1, 1994, the Texas SOICC will enter its last year as a recipient of Perkins dollars for conducting automated follow-up. Part of the SOICC's responsibilities, in anticipation of ineligibility for Perkins dollars after that point, was to develop a legislative plan to secure permanent funding for the follow-up system for Program Year 1995-96 and beyond. A synopsis of the legislative plan appears in the "Recommendations" section of this report. The chief aims of the draft legislative plan are to improve the depth and breadth of coverage of the follow-up system by including participation of additional workforce development partners and by securing sufficient funding for mandated longitudinal research activities on behalf of all partners.

2) Governance

The statement of work, major duties and tasks, and master calendar were developed in collaboration with a tri-agency management team: Dr. Mark Butler (TEA), Robin Campbell (TDoC), and Helen Giraitis (Coordinating Board). The tri-agencies jointly funded other workforce development activities with each agency taking lead responsibility for fiscal management of one or more of the related grants. The Coordinating Board was responsible for managing the Automated Student and Adult Learner Follow-Up System grant for Program Year 1993-94. Operations were managed by a system director employed by the SOICC.

To ensure responsiveness to customer needs, a committee structure was designed to maximize input from practitioners. Five site-based committees were established: Amarillo, Beaumont, Dallas, Houston and McAllen. (Membership lists are included in Appendix VII.) The System Director convened the first meeting of each site-based committee to explain responsibilities and the channels of communication to be used for forwarding ideas and suggestions for system development and activities. Each site-based committee elected a chair and vice-chair. Responsibility for convening subsequent site-based committee meetings was turned over to chairpersons. The System Director and the employer survey sub-contractor served thereafter as resource persons at the disposal of the site-based committees. The chair and vice chairperson of each site-based committee became members of the statewide Steering Committee. Additional persons were added to the Steering Committee to balance constituency representation, to provide continuity, and to take advantage of the special expertise and experience of progressive individuals who were instrumental in the evolution of the follow-up system prior to passage of Senate Bill 642. The tri-agencies were equally represented on the Steering Committee. The System Director co-chaired the Steering Committee. The employer survey subcontractor sat on the Steering Committee *ex officio*.

Resolutions were placed before the Steering Committee by members speaking for their respective institutions, the site-based committees they represented, and/or *ad hoc* data user groups with special technical expertise and interest in the follow-up system's performance. Every effort was made to secure unanimity on all action recommended by the Steering Committee. The chief concerns expressed by the Steering Committee involved the following issues:

- implications of Senate Bill 642 for TCWEC's role in the follow-up system;
- methods for determining the degree of training-relatedness of job placements;
- additional data sharing agreements to optimize coverage of successful outcomes;
- procedures for supplemental follow-up to document successful outcomes for individuals not located through record linkages;
- plans for regional workshops and the statewide conference; and
- performance calculations, report and display formats best suited to convert follow-up data into useful information.

The SOICC responded to the Steering Committee's satisfaction on each issue. (Details are provided in this narrative, *passim*.) By giving practitioners a voice, the governance structure facilitated consensus and "buy-in" to increase the likelihood that follow-up data would be used as intended to drive program improvement.

3) Obtaining Outcomes Data

The primary task of the Follow-Up System in Program Year 1993-94 was to obtain outcome information on the former students and participants of the workforce development programs. (Breadth of the operation was increased to serve programs operated by TEA and TDoC as well as those previously served on behalf of the Coordinating Board and by increasing the employer follow-up survey tenfold. Such rapid increases in service levels could not be achieved without improving the degree of automation.) The process for obtaining outcomes data consists of three phases: seed record extraction, record matching, and the employer survey. (The process flow is depicted in Appendix I.)

Seed Records

To determine what data elements should be included in the seed records, each of the three agencies participating in the 1993-94 follow-up system developed hypotheses about the likely causes of potential variance in outcomes across programs or subpopulations served. Hypotheses were derived from agency/program mission statements, goals and objectives, eligibility rules, funding and program approval guidelines, and performance histories. The hypotheses translate notions of how the programs should have worked for various eligible subgroups into empirical questions. Seed records contain background information on former students or participants such as demographic information, program participation and/or completion status, and various special populations. Such items constitute the principle independent variables used in disaggregating and explaining variance in documented outcomes.

While the tri-agencies share a common goal to increase the supply of skilled workers, they operate under different rules regarding participant eligibility and the kinds of services to be delivered. That is, while all three agencies wanted to document the same range of successful outcomes (as dependent variables), their hypotheses and research questions were slightly different. Moreover, the tri-agencies maintained separate information management systems with data elements included and defined independently of data decisions made by other workforce development partners. Even where conforming amendments in federal legislation or overlapping missions, goals and objectives focused the three agencies' efforts in a common direction, relevant data items were not necessarily recorded in identical formats in the separate information management systems.

In deciding how to construct the seed records, the System Director in consultation with the tri-agency management team had to provide sufficient flexibility to address the varied needs and capacities of the partners. Balanced against the flexibility principle was the need for efficiency. In the start-up phase, early pilot participants (NHMCC and the Brazosport Group for higher education, Leander ISD for public education) manually constructed seed records. That proved to be an inefficient, time and resource-consuming effort. In that the variables of interest (i.e., those most likely to have explanatory power) are already contained in each of the partners' management information systems, inclusion of items in the seed record was limited to elements in existing records. That decision saved the partner agencies from the burden of manually constructing new variables. Extraction of seed records was fully automated.

The tri-agency management team also determined that it would be inefficient to write separate record matching programs to link each agency's seed records to the data bases containing outcomes information. A matching program consists of several decision rules:

> What item found in both the seed record and the linked files identifies a unique match?
>
> Where in the Seed record file layout can that element be found? Where is it in the linked data base?
>
> When a unique match is identified, what items in the linked data base should be written to the seed record?
>
> Where in the seed record file layout should the specified elements from the linked data base be written?

Given these decision rules, the tri-agency management team found it could balance flexibility against efficiency with two rules of its own for seed record construction:

1) Since Social Security numbers contained in both the agencies' management information systems and the linked data bases provide the basis for a unique match, that variable should be located in the same position and in the same format in each agency's seed record file layout.

2) Seed records should be of identical length so the matching program can begin appending information from the linked data bases in the same position in every file layout. Aside from conforming to the positioning and format of the Social Security number, each agency was at liberty to include other items of its choice in the seed record in any other available position so long as the file layout did not exceed the specified maximum length.

File layouts for the three agencies' seed records and appended information appear in Appendix II. While there are a number of common elements, note that each agency was able to address questions that might not be applicable or of interest to the other partners.

Empirical research methods often raise as many questions as they answer. Unanticipated results – either contrary to prevailing theory or inconsistent with prior performance – suggest that additional independent variables need to be explored as possible explanations. It would be tempting (**but inefficient**) to include every item from each agency's management information system in the seed records it submits for follow-up. By adhering to a fixed seed record length of 62 bytes, the agencies were forced to be selective.

Some important explanatory variables, however, might be overlooked when items are selected for seed records. The agencies need the flexibility to look at additional independent variables (other than those in their seed records) as the need arises. Rather than enlarge the seed record to cover every possibility, the tri-agency management team determined that such flexibility could be preserved if, when student/participant files were returned to the agencies/program administrators, Social Security numbers were neither stripped nor encrypted. That would allow the agencies/program administrators to link the records back to their own management information systems to extract and append additional variables at the very end of the records returned. Two hypothetical cases illustrate this flexibility.

Grading practices are locally determined. Wide variance in those practices would make statewide analysis of the correlation between grade point averages (GPA) and successful outcomes meaningless. Therefore, the tri-agency management team decided not to include grade information in seed records. Nonetheless, a particular school district or college might want to assess the predictive power of its grading practices. Upon return of the files, a program administrator could link seed records by Social Security number back to an in-house data base to extract or manually construct additional independent variables (such as GPA or GPA within major) at the end of each record for further analysis.

Student/participant intent is undoubtedly a crucial determinant of post-program behavior. However, there currently is no agreed upon method for capturing "intent"; some service providers do not even attempt to collect student intent information. While the tri-agency management team recognized the potential explanatory power of student intent, they decided not to include the variable in seed records. Again, if program administrators choose to examine the correlation between student intent and outcomes, they may do so by relinking returned files to in-house data bases.

Record Matching

Each of the tri-agencies was responsible for extracting seed records for the cohorts to be studied. Under the 1993-94 follow-up grant, each extracted seed records for former students or participants who completed or left programs during the program/school year ending July 1, 1993. Seed records were delivered to the SOICC.

Record matching consisted of four phases:

- developing data sharing agreements;
- processing by the Coordinating Board;
- processing by TEC; and
- conducting the employer follow-up survey.

Data Sharing Agreements

Before record matching can be conducted, data sharing agreement among the tri-agencies and the agencies administering the linked data bases had to be in place. Where data sharing agreements were missing, the SOICC negotiated them. (A sample data sharing agreement is provided in Appendix III. To move the system closer to the ideal, the Director continues to negotiate agreements for breadth of access to additional data bases likely to contain pertinent outcomes information.) These agreements cover basic points:

> Under what authority does the SOICC and its customers request data release?
>
> Under what authority is the data provider authorized to release requested information?
>
> For what legitimate purpose(s) will the data be used?
>
> What benefits will result from the analysis of the data?
>
> What security arrangements will be made to safeguard the released data while in the hands of the SOICC and its customers?
>
> How will reports and data displays be formatted to avoid release of individually identifiable information?
>
> What penalties will be imposed if the data sharing agreement is breached? (upon the agency? upon the responsible individual?)

Higher Education Match

The SOICC first forwarded the seed records to the Coordinating Board for matching with the master enrollment files for the fall term, 1993. The master enrollment files contain information on all students pursuing higher education at any of the state's publicly funded community and technical colleges, universities, or health science centers. When a match was identified, the following information was appended to the seed record:

> Where did the student enroll? (by FICE code)
> In what kind of institution (community/technical college, university, or health science center)?
> What was the student's declared major (if any)?
> Is that major considered academic, technical, or Tech Prep?
> How many credit hours were attempted in the matched term?
> In what year and semester was the match found?

For a detailed file layout, see Appendix II.

TEC Match

Once the higher education match was completed, the SOICC retrieved the files and delivered them to the TEC for matching against available quarterly UI wage-records. (These records cover approximately 97% of workers in Texas.) The TEC maintains five quarters of data on-line. Employers have a deadline for submitting quarterly data but may correct the information they submit at any time; therefore, the UI wage-records may be constantly updated. However, the TEC releases UI wage-record information as "*official*" approximately five months after the close of each quarter. To afford ample opportunity for June 1993 graduates/completers to search for employment, the management team wanted access to UI wage-records for the fourth quarter of 1993. The match run was conducted by TEC when those data became available officially in May, 1994. TEC followed these decision rules in conducting the match:

Match against most recent quarter (4th quarter 1993) first.

A. If a matching record is found, append the data to the seed record for every employer found in that quarter.

1) Append wage record information to the seed record **only for most recent quarter where a hit was found**.
2) Can there be more than one set of employment data for an individual in the most recent quarter matched? YES
3) Can there be employment data for more than one quarter appended to any seed record? NO

B. If no hit is found in the 4th quarter, match in sequence against: 3rd quarter 1993; 2nd quarter 1993; 1st quarter 1993; then 4th quarter 1992.

When a match was found, the following information was appended to the seed record:

What firm employed the former student/participant?
Where was the firm located?
What is the principle business or industry activity engaged in by the firm?
How much did the former student/participant earn in the matched quarter?
In what quarter was the most recent match found?

For a detailed file layout, see Appendix II.

While as many as five quarters were matched, the study was not longitudinal. Ideal depth of coverage will be achieved only when pre-enrollment and post-completion labor market statuses are compared and when outcomes are documented over multiple post-completion time periods.

Employer Survey

Why is an Employer Survey Necessary?

Senate Bill 642 specifies that, for depth of coverage, occupationally-specific information should be collected for evaluating the labor market outcomes of workforce development programs. While UI wage-records include the industrial classification of firms employing workers covered by the Texas Unemployment Compensation Act, occupational titles for individual employees are not included. "*Enhancement*" of the UI wage-record to include occupational titles has been discussed but no decision has been reached on modifying the quarterly reports. Until such time as the state adopts an enhanced UI wage-record, occupationally specific employment information must be obtained through traditional survey techniques. While the employer follow-up is automated, it adds a step to the process that would not be necessary if the requisite data items could be extracted from enhanced UI wage-records.

Prior to creation of the automated follow-up system, service providers conducted separate surveys to collect occupationally-specific information. They attempted to contact former students/participants at the last known address or telephone number. If contact was made, they had to rely on the former student/participants' self-reported employment outcomes. To verify employment, they had to obtain permission to contact the employer, locate the firm, and hope that the person contacted can and will provide accurate information. The method was costly and time-consuming for the service providers. In addition, employers were burdened with employment verification requests. They were approached separately at different times of the year by multiple service providers each using a different survey instrument.

Consolidation Reduces Survey Burden

In issuing an employer follow-up survey subcontract on behalf of the workforce development partners, the automated follow-up system accomplished two things:

- it relieved the service providers of the bulk of the data collection effort; and
- it relieved employers of excessive survey burdens.

Rather than rely on the service providers' records on last known point of contact for their former students/participants, the follow-up survey was distributed to employers at the address contained in TEC files. Whereas contact information in service providers' manual files were seldom updated as their former students/participants changed addresses and phone numbers, the use of employer contact information electronically stored and updated in the TEC records allowed the follow-up system to automate subject location. No matter how many times they moved so long as they were employed by a firm covered by the Texas Unemployment Compensation Act, subjects can be located through the UI wage-record match for inclusion in the employer follow-up survey.

Contact information for all subjects in the cohorts being studied were sorted by employer. Mail labels and survey instrument printing were automated. Requests for information on all former students/participants (regardless of program status) employed by a single firm were consolidated on one survey instrument. A cover letter assured employers that they would be approached at only one point during the year with a single, standardized format and that the information they provided would be used for legitimate purposes with sufficient safeguards in place to protect data privacy and confidentiality. Such assurances increase the likelihood that employers will respond and that their responses will be accurate.

Employers were asked to supply the following information:

> What is the former student/participant's occupational title?
>
> At what worksite was the former student/participant employed?
>
> Did the former student/participant work full time/full quarter during the quarter for which earnings data were available?

Persistence Efforts Stimulate High Response Rate

The employer survey subcontractor persisted in follow-up to ensure high response rates. The subcontractor maintained an automated response log. Second and third wave reminder notices were generated for employers who had not responded at predetermined intervals. Non-responding firms employing five or more follow-up subjects were contacted by telephone and encouraged to respond. The employer survey subcontractor's contact information was supplied on the face of the survey instrument to encourage employers to call for technical assistance and/or explanations of the survey's purpose. Achieving a response rate in excess of 85% improves the breadth of coverage and increases the likelihood that data will be perceived as valid and reliable for use in program evaluation and planning.

Coding Employer-Supplied Occupational Titles

Employers submitted actual occupational payroll titles even if unique to the firm. The employer survey subcontractor was responsible for assigning standardized codes to the occupational titles. Available tools for determining the training-relatedness of job placements rely on the Occupational Employment Statistic (OES). The JTPA system uses OES codes in its management information system; the SOICC and TEC use OES codes in labor market demand forecasts. While other coding systems are available, the tri-agency management team agreed to use the OES system. More than half of the occupational titles submitted by employers corresponded to titles defined in the OES system. The vast majority of the remaining titles corresponded to definitions in the much larger *Dictionary of Occupational Titles* (DOT). Employer-supplied DOT titles were converted to OES code equivalents easily by using the DOT-to-OES crosswalk developed by the NOICC. The SOICC also added more than 20,000 payroll titles from responses on IRS forms to the OES autocoding system.

Where employer-supplied titles could not be found in either the OES or DOT systems, or in the IRS/census, other techniques were used. Employers were recontacted and asked to provide more detail about the duties and tasks performed under titles not yet coded. By matching duties and tasks to code definitions, employer-supplied titles were converted to their OES equivalents. Dr. Jim Reed had conducted similar research for several years prior to his selection as the employer survey subcontractor. Over time he constructed history files for unique employer-supplied titles. In addition, the Florida follow-up system used the identical technique to build history files. By sharing resource, both Dr. Reed and FETPIP accessed information that expanded coverage of the automated coding technique. They also decreased their need for recontacts since most employer-supplied unique titles have appeared in prior studies and appropriate OES code conversions have been entered into one or the other's history files. Less than 5% of the employer-supplied occupational titles remained uncodeable after all contingency techniques were exhausted. The OES codes assigned to the employer-supplied occupational titles were included in the files returned to service providers to improve their usefulness.

Converting Zip Code into Useful Work-Site Information

The firm address contained in the UI wage records might not represent the work-site. Rather, it may be the firm's headquarters, the location of its payroll processing operations, or the location of an out-source payroll processing firm. Therefore, the survey instrument asked for the Zip code of the work-site location. Such information allows researchers to study the migration patterns of former students/participants as they search for employment. Information by Zip code can be aggregated into other meaningful geographic units. The employer survey subcontractor converted employer supplied Zip codes into city, state and county information. To improve the usefulness of the data files, the SOICC generated a crosswalk which converts FIPS (county codes) into Quality Work Force Planning regions, JTPA SDAs, the Comptroller's Uniform State Service Regions (USSRs), TEC Regions.

Identifying Subjects Who Worked Full Time/Full Quarter

UI wage records contain total earnings for each quarter worked. They do not contain information about the hourly wage or hours worked during the quarter for each employee. Inclusion of either variable has been proposed as part of the enhanced UI wage-record. However, no decision has been made about modifying the quarterly reports. Until the UI wage-record is enhanced, other methods must be used to make total quarterly earnings more meaningful.

At the beginning of Program Year 1992-93, the follow-up Steering Committee debated the feasibility of various approaches for obtaining more detailed information. The survey instrument could ask for hourly wage or hours worked. The Committee was advised by Jay Pfeiffer, the director of the Florida follow-up system, that inclusion of such a question would require firms to have both their personnel and payroll departments to respond to separate portions of the instrument. That cuts the likelihood of response in half. Mr. Pfeiffer advised that asking employers to identify subjects who worked full time/full quarter would increase response rates while rendering information that was only slightly less detailed. (His advice was based on experience. When FETPIP asked for hours worked in their first survey, they achieved a 40% response rate; since converting to the full time/full quarter flag, they have consistently achieved 80% response rates or better.) To confirm Mr. Pfeiffer's advice, three drafts of the survey instrument were submitted to the regional Job Service Employers' Committees (JSEC). They confirmed that employers would be more likely to respond to the form requesting only the full time/full quarter flag. The simpler survey instrument, therefore, was adopted. That decision increased the breadth of coverage and increased the likelihood that follow-up data would be sufficiently valid and reliable for use in program planning and evaluation.

4) Analyzing Results

Because community and technical colleges have the longest history of participation in automated follow-up, Coordinating Board staff under the direction of Helen Giraitis provided analysis of follow-up data for the cohorts of former higher education students. Because the JTPA system has used follow-up data collected through participant telephone surveys by Texas A&M University under contract to TDoC, staff members in the Workforce Development Division were responsible for analyzing automated follow-up data on former Title IIA and Title III participants. (Jim Gaston and Robin Campbell led the TDoC data analysis team.) Marc Anderberg, Follow-Up System Director, with the assistance of pilot district liaison as well as Dr. Mark Butler, Dave Kinnaman and Judith Hetherly of TEA's Career and Technology Education Division took responsibility for the analysis of follow-up data for the public education pilots. John Syers (Region IV ESC), Dr. Larry Kohler and Leonard Thielin (McAllen ISD), and Dr. Sandra Neubert (Waco ISD) were particularly helpful in analyzing public education outcomes. The division of labor improved system efficiency. It ensured that experienced and respected higher education and JTPA practitioners analyzed and promoted the use of their own data. It concentrated technical assistance for public education where it was most needed. By engaging in a collaborative process, it enhanced the buy-in of public education practitioners.

Results for Public Education

Pilot districts were selected from volunteers. Their graduates were not representative of the entire state's high school completers. Therefore, it would be inappropriate to combine the files of the pilot schools to develop a composite picture. Analysis herein is limited to separate reports on each pilot.

First a prototype report card was developed for each pilot district. The labor market outcomes and continued pursuit of education are displayed on facing pages. Labor market outcomes are broken down further to show students the likelihood of earning more than the equivalent of minimum wage if they seek employment immediately upon receiving a high school diploma. Data also were analyzed to determine the types of employment high school graduates are most likely to receive.

ALDINE INDEPENDENT SCHOOL DISTRICT
1992-93 Graduating Cohort
(all campuses/student with some vocational training fall term)

Number of usable records	**651**		
Successful Outcomes Documented			
Working and/or pursuing higher education (public institution) in Texas	527 **81.0%**		
Not Located			
Not located via record linkage techniques to available data bases	124 19.0%		

Labor Market Outcomes
(post-graduation through fourth quarter 1993)

Employed in Texas in job covered by state's Unemployment Compensation Act	444 **68.2%**		
Working and enrolled in Texas public higher ed. institution		201 30.9%	
as %-age of those working			45.3%
Working only/not enrolled in Texas public higher ed. institution		243 37.3%	
as %-age of those working			54.7%
Earning more than $2,205/quarter (min. wage X 40 hrs. X 13 weeks)		115 17.7%	
as %-age of those working			25.9%
Employed in the federal civil service		to be inserted here	
Employed by the U.S. Postal Service		to be inserted here	
Entered the Military		to be inserted here	

Top industries by number of job placements for Aldine grads:

SIC	Industry	Placements	% of grads	% of working grads
54	Grocery Stores	79	12.1%	17.8%
58	Eating & Drinking Est.	69	10.6%	15.5%
73	Business Services	67	10.3%	15.1%
53	General Merchandise Stores	34	5.2%	7.7%
55	Auto Service Stations	20	3.0%	4.5%
56	Apparel Stores	20	3.0%	4.5%
80	Health Services	16	2.5%	3.6%

Seven industries account for 68.7% working Aldine grads located in Texas jobs covered by state unemployment compensation act.

Pursuing Higher Education

Enrolled in Texas public institution of higher ed. (fall term, 1993)	284	43.6%	
Enrolled in Tx public higher ed institution and working in Texas	201	30.9%	
as %-age of those enrolled			70.8%
Enrolled in Tx public higher ed institution but not found working in Texas	83	12.7%	
as %-age of those enrolled			29.2%
Enrolled in Tx public community or technical college	183	28.1%	
as %-age of those enrolled			64.4%
Enrolled in Tx public senior institution (university)	101	15.5%	
as %-age of those enrolled			35.6%
Enrolled in Tx public health sciences institution	0	0%	
as %-age of those enrolled			0%

Top Texas public institutions of higher education by placements of Aldine grads:

Institution	# of grads enrolled	as % of all grads	as % of Aldine grads pursuing higher ed at Tx public institution
N. Harris/Montgomery CC	159	24.4%	56.0%
Sam Houston State	19	2.9%	6.7%
Prairie View A&M	14	2.2%	4.9%
U of Houston	13	2.0%	4.6%
U of Houston - Downtown	13	2.0%	4.6%
Steven F. Austin U	13	2.0%	4.6%

Six Texas public institutions account for 81.4% of former Aldine grads found pursuing higher education in a Texas public institution.

Top five declared majors among Aldine grads pursuing higher education:

Major area	# of grads enrolled	as % of all grads	as % of Aldine grads pursuing higher ed at Tx public institution
Health Sciences	50	20.2%	17.6%
Business	39	6.0%	13.7%
Protective Services	16	2.5%	5.6%
Education Services	14	2.2%	4.9%
Liberal Arts	12	1.8%	4.2%

Five major areas of study account for 46.0% of majors declared by former Aldine grad pursuing higher ed in Texas public institution.

Undeclared	72	11.0%	25.4%

AMARILLO INDEPENDENT SCHOOL DISTRICT
1992-93 Graduating Cohort
(all campuses/all students with some vocational training fall term)

Number of usable records		**718**		
Successful Outcomes Documented				
Working and/or pursuing higher education (public institution) in Texas	627 **87.3%**			
Not Located				
Not located via record linkage techniques to available data bases	91 12.7%			
Labor Market Outcomes (post-graduation through fourth quarter 1993)				
Employed in Texas in job covered by state's Unemployment Compensation Act		568 79.1%		
Working and enrolled in Texas public higher ed. institution			284 39.6%	
as %-age of those working				50.0%
Working only/not enrolled in Texas public higher ed. institution			284 39.6%	
as %-age of those working				50.0%
Earning more than $2,205/quarter (min. wage X 40 hrs. X 13 weeks)			140 19.5%	
as %-age of those working				24.6%
Employed in the federal civil service			to be inserted here	
Employed by the U.S. Postal Service			to be inserted here	
Entered the Military			to be inserted here	

Top industries by number of job placements for Amarillo grads:

SIC	Industry	Placements	% of grads	% of working grads
58	Eating & Drinking Est.	144	20.1%	25.4%
54	Grocery Stores	52	7.2%	9.2%
53	General Merchandise Stores	41	5.7%	7.2%
80	Health Services	40	5.6%	7.0%
59	Miscellaneous Retail Stores	37	5.2%	6.5%
56	Apparel Stores	32	4.5%	5.6%
73	Business Services	23	3.2%	4.0%

Seven industries account for 64.9% working Amarillo grads located in Texas jobs covered by state unemployment compensation act.

AMARILLO (Continued)

Pursuing Higher Education

Enrolled in Texas public institution of higher ed. (fall term, 1993)	343 56.8%		
Enrolled in Tx public higher ed institution and working in Texas		284 39.6%	
as %-age of those enrolled			82.8%
Enrolled in Tx public higher ed institution but not found working in Texas		59 8.2%	
as %-age of those enrolled			17.2%
Enrolled in Tx public community or technical college		251 35.0%	
as %-age of those enrolled			73.2%
Enrolled in Tx public senior institution (university)		92 12.8%	
as %-age of those enrolled			26.8%
Enrolled in Tx public health sciences institution		0 0%	
as %-age of those enrolled			0%

Top Texas public institutions of higher education by placements of Amarillo grads:

Institution	# of grads enrolled	as % of all grads	as % of Amarillo grads pursuing higher ed at Tx public institution
Amarillo College	232	32.3%	67.6%
West Texas A&M	49	6.8%	14.3%
Texas Tech	21	2.9%	6.1%
UT - Austin	7	1.0%	2.0%

Four Texas public institutions account for 90.0% of former Amarillo grads found pursuing higher education in a Texas public institution.

Top five declared majors among Amarillo grads pursuing higher education:

Major area	# of grads enrolled	as % of all grads	as % of Amarillo grads pursuing higher ed at Tx public institution
Health Sciences	89	12.4%	25.9%
Business	46	6.4%	13.4%
Liberal Arts	28	3.9%	8.2%
Psychology	17	2.4%	5.0%

Four major areas of study account for 52.5% of majors declared by former Amarillo grad pursuing higher ed in Texas public institution.

Undeclared	73	10.2%	21.3%

BEAUMONT INDEPENDENT SCHOOL DISTRICT
1992-93 Graduating Cohort
(all campuses/all students with some vocational training fall term)

Number of usable records 332

Successful Outcomes Documented

Working and/or pursuing higher education (public institution) in Texas 270 81.3%

Not Located

Not located via record linkage techniques to available data bases 62 18.7%

Labor Market Outcomes
(post-graduation through fourth quarter 1993)

Employed in Texas in job covered by state's Unemployment Compensation Act 237 71.4%

Working and enrolled in Texas public higher ed. institution 108 32.5%
as %-age of those working 45.6%

Working only/not enrolled in Texas public higher ed. institution 129 38.9%
as %-age of those working 54.4%

Earning more than $2,205/quarter (min. wage X 40 hrs. X 13 weeks) 32 9.6%
as %-age of those working 13.5%

Employed in the federal civil service to be inserted here

Employed by the U.S. Postal Service to be inserted here

Entered the Military to be inserted here

Top industries by number of job placements for Beaumont grads:

SIC	Industry	Placements	% of grads	% of working grads
58	Eating & Drinking Est.	84	25.3%	35.4%
54	Grocery Stores	35	10.5%	14.8%
56	Apparel Stores	21	6.3%	8.7%
53	General Merchandise Stores	20	6.0%	8.4%
59	Miscellaneous Retail Stores	15	4.5%	6.3%

Five industries account for 73.6% working Beaumont grads located in Texas jobs covered by state unemployment compensation act.

BEAUMONT (Continued)

Pursuing Higher Education

Enrolled in Texas public institution of higher ed. (fall term, 1993)	**141**	**42.5%**	
Enrolled in Tx public higher ed institution and working in Texas	108	32.5%	
as %-age of those enrolled			76.6%
Enrolled in Tx public higher ed institution but not found working in Texas	33	9.9%	
as %-age of those enrolled			23.4%
Enrolled in Tx public community or technical college	21	6.3%	
as %-age of those enrolled			14.9%
Enrolled in Tx public senior institution (university)	119	35.8%	
as %-age of those enrolled			84.4%
Enrolled in Tx public health sciences institution	1	0.3%	
as %-age of those enrolled			0.7%

Top Texas public institutions of higher education by placements of Beaumont grads:

Institution	# of grads enrolled	as % of all grads	as % of Beaumont grads pursuing higher ed at Tx public institution
Lamar University	81	24.4%	57.4%
Prairie View A&M	17	5.1%	12.1%
Lamar Inst. of Tech.	12	3.6%	8.5%
UT - Austin	7	2.1%	5.0%

Six Texas public institutions account for 83.0% of former Beaumont grads found pursuing higher education in a Texas public institution.

Top five declared majors among Beaumont grads pursuing higher education:

Major area	# of grads enrolled	as % of all grads	as % of Beaumont grads pursuing higher ed at Tx public institution
Health Sciences	18	5.4%	12.8%
Liberal Arts	8	2.4%	5.6%
Multi-Disciplinary	6	1.8%	4.2%
Business	4	1.2%	2.8%

Five major areas of study account for 79.3% of majors declared by former Beaumont grad pursuing higher ed in Texas public institution.

Undeclared	**76**	**22.9%**	**53.9%**

HEREFORD INDEPENDENT SCHOOL DISTRICT
1992-93 Graduating Cohort
(all students with some vocational training fall term)

Number of usable records 175

Successful Outcomes Documented

Working and/or pursuing higher education (public institution) in Texas 149 85.1%

Not Located

Not located via record linkage techniques to available data bases 26 14.9%

Labor Market Outcomes
(post-graduation through fourth quarter 1993)

Employed in Texas in job covered by state's Unemployment Compensation Act 141 80.6%

Working and enrolled in Texas public higher ed. institution 55 31.4%
as %-age of those working 39.0%

Working only/not enrolled in Texas public higher ed. institution 86 49.1%
as %-age of those working 61.0%

Earning more than $2,205/quarter (min. wage X 40 hrs. X 13 weeks) 33 18.9%
as %-age of those working 23.4%

Employed in the federal civil service to be inserted here

Employed by the U.S. Postal Service to be inserted here

Entered the Military to be inserted here

Top industries by number of job placements for Hereford grads:

SIC	Industry	Placements	% of grads	% of working grads
58	Eating & Drinking Est.	30	17.1%	21.3%
20	Food & Kindred Products	15	8.6%	10.6%
54	Grocery Stores	11	6.3%	7.8%
82	Education Services	10	5.7%	7.1%
53	General Merchandise Stores	8	4.6%	5.7%
51	Wholesale - Nondurable Goods	6	3.4%	4.3%
01	Agriculture (crops)	6	3.4%	4.3%
80	Health Services	5	2.9%	3.5%

Eight industries account for 64.6% of working Hereford grads located in Texas jobs covered by state unemployment compensation act.

HEREFORD (Continued)

Pursuing Higher Education

Enrolled in Texas public institution of higher ed. (fall term, 1993)	63 72.9%		
Enrolled in Tx public higher ed institution and working in Texas		55 31.4%	
as %-age of those enrolled			87.3%
Enrolled in Tx public higher ed institution but not found working in Texas		8 4.6%	
as %-age of those enrolled			12.7%
Enrolled in Tx public community or technical college		15 8.6%	
as %-age of those enrolled			23.8%
Enrolled in Tx public senior institution (university)		48 27.4%	
as %-age of those enrolled			76.2%
Enrolled in Tx public health sciences institution		0 0%	
as %-age of those enrolled			0%

Top Texas public institutions of higher education by placements of Hereford grads:

Institution	# of grads enrolled	as % of all grads	as % of hereford grads pursuing higher ed at Tx public institution
West Texas A&M	32	18.3%	50.8%
Amarillo College	8	4.6%	12.7%
Texas Tech	6	3.4%	9.5%
Angelo State	6	3.4%	9.5%
South Plains College	6	3.4%	9.5%
			92.0%

Five Texas public institutions account for 92.0% of former Hereford grads found pursuing higher education in a Texas public institution.

Top six declared majors among Hereford grads pursuing higher education:

Major area	# of grads enrolled	as % of all grads	as % of Hereford grads pursuing higher ed at Tx public institution
Liberal Arts	24	13.7%	**38.1%**
Health Sciences	11	6.3%	**17.5%**
Business	5	2.9%	**7.9%**
Multi-Disciplinary	3	1.7%	**4.8%**
Life Sciences	3	1.7%	**4.8%**
Agribusiness	3	1.7%	**4.8%**

Six major areas of study account for 77.9% of majors declared by former Hereford grad pursuing higher ed in Texas public institution.

Undeclared	2	**1.1%**	**3.2%**

LEANDER HIGH SCHOOL
1992-93 Graduating Cohort
(all students with some vocational training fall term)

Number of usable records		102		
Successful Outcomes Documented				
Working and/or pursuing higher education (public institution) in Texas	99 97.1%			
Not Located				
Not located via record linkage techniques to available data bases	3 2.9%			
Labor Market Outcomes (post-graduation through fourth quarter 1993)				
Employed in Texas in job covered by state's Unemployment Compensation Act		89 87%		
Working and enrolled in Texas public higher ed. institution			48 47.1%	
as %-age of those working				54%
Working only/not enrolled in Texas public higher ed. institution			41 40.2%	
as %-age of those working				46%
Earning more than $2,205/quarter (min. wage X 40 hrs. X 13 weeks)			23 22.5%	
as %-age of those working				26%
Employed in the federal civil service			to be inserted here	
Employed by the U.S. Postal Service			to be inserted here	
Entered the Military			to be inserted here	

Top industries by number of job placements:

SIC	Industry	Placements	% of grads	% of working grads
58	Eating/Drinking Est.	13	12.7%	14.6%
54	Grocery Stores	11	10.8%	12.4%
73	Business Services (temps)	10	9.8%	11.3%
50	Wholesale - Durable	6	5.9%	6.7%
53	General Merchandise Stores	5	4.9%	5.6%

Five industries account for 50.6% of working Leander grads located in Texas jobs covered by state unemployment compensation act.

LEANDER (Continued)

Pursuing Higher Education

Enrolled in Texas public institution of higher ed. (fall term, 1993)	51 50%		
Enrolled in Tx public higher ed institution and working in Texas		48 47.1%	
as %-age of those enrolled			94.1%
Enrolled in Tx public higher ed institution but not found working in Texas		3 2.9%	
as %-age of those enrolled			5.9%
Enrolled in Tx public community or technical college		30 29.4%	
as %-age of those enrolled			58.8%
Enrolled in Tx public senior institution (university)		21 20.6%	
as %-age of those enrolled			41.2%
Enrolled in Tx public health sciences institution		0 0%	
as %-age of those enrolled			0.0%

Top Texas public institutions of higher education by placements of Leander grads:

Institution	# of grads enrolled	as % of all grads	as % of Leander grads pursuing higher ed at Tx public institution
Austin Com. College	27	26.5%	53.0%
U.T. - Austin	9	8.8%	17.6%
Southwest Tx State	3	2.9%	5.9%
Steven F. Austin U.	3	2.9%	5.9%
Tarleton State U.	3	2.9%	5.9%

Five Tx public institutions of higher ed account for 88.3% of former Leander grads found pursuing higher education in Texas public institution.

Top five declared majors among Leander grads pursuing higher education:

Major area	# of grads enrolled	as % of all grads	as % of Leander grads pursuing higher ed at Tx public institution
Liberal Arts	24	23.5%	47.1%
Business	6	5.9%	12.0%
Health Professions	5	4.9%	10.0%
Ag (crop)	3	3.0%	5.9%
Ag (animal)	3	3.0%	5.9%

Five major areas of study account for 80.9% of majors declared by former Leander grad pursuing higher ed in Texas public institution.

Undeclared	0	0%

McALLEN INDEPENDENT SCHOOL DISTRICT
1992-93 Graduating Cohort
(all campuses/all students with some vocational training fall term)

Number of usable records		765	
Successful Outcomes Documented			
Working and/or pursuing higher education (public institution) in Texas	596 77.9%		
Not Located			
Not located via record linkage techniques to available data bases	169 22.1%		
Labor Market Outcomes (post-graduation through fourth quarter 1993)			
Employed in Texas in job covered by state's Unemployment Compensation Act		445 58.2%	
Working and enrolled in Texas public higher ed. institution			230 30.1%
as %-age of those working			51.7%
Working only/not enrolled in Texas public higher ed. institution			215 28.1%
as %-age of those working			48.3%
Earning more than $2,205/quarter (min. wage X 40 hrs. X 13 weeks)			67 8.8%
as %-age of those working			15.1%
Employed in the federal civil service			to be inserted here
Employed by the U.S. Postal Service			to be inserted here
Entered the Military			to be inserted here

Top industries by number of job placements for McAllen grads:

SIC	Industry	Placements	% of grads	% of working grads
54	Grocery Stores	68	8.9%	15.3%
53	General Merchandise Stores	65	8.5%	14.6%
58	Eating & Drinking Estab.	63	8.2%	14.2%
56	Apparel Stores	56	7.3%	12.6%
59	Miscellaneous Retail	32	4.2%	7.2%
73	Business Services (temps)	25	3.3%	5.6%
82	Education Services	22	2.9%	4.9%
80	Health Services	16	2.0%	3.6%
50	Wholesale - Durable Goods	16	2.0%	3.6%

Nine industries account for 81.6% working McAllen grads located in Texas jobs covered by state unemployment compensation act.

Pursuing Higher Education

Enrolled in Texas public institution of higher ed. (fall term, 1993)	381 49.8%		
Enrolled in Tx public higher ed institution and working in Texas		230 30.1%	
as %-age of those enrolled			60.4%
Enrolled in Tx public higher ed institution but not found working in Texas		151 19.7%	
as %-age of those enrolled			39.6%
Enrolled in Tx public community or technical college		40 5.2%	
as %-age of those enrolled			10.5%
Enrolled in Tx public senior institution (university)		338 44.2%	
as %-age of those enrolled			88.7%
Enrolled in Tx public health sciences institution		3 0.4%	
as %-age of those enrolled			0.8%

Top Texas public institutions of higher education by placements of McAllen grads:

Institution	# of grads enrolled	as % of all grads	as % of McAllen grads pursuing higher ed at Tx public institution
UT - Pan American	237	31.0%	62.2%
So Tx Community College	25	3.4%	6.6%
Texas A&M	24	3.1%	6.3%
UT - Austin	23	3.0%	6.0%
UT - San Antonio	12	1.6%	3.1%
Tx A&M - Kingsville	11	1.4%	2.9%

Six Texas public institutions account for 87.1% of former McAllen grads found pursuing higher education in a Texas public institution.

Top five declared majors among McAllen grads pursuing higher education:

Major area	# of grads enrolled	as % of all grads	as % of McAllen grads pursuing higher ed at Tx public institution
Business	65	8.5%	17.1%
Health Sciences	51	6.7%	13.9%
Engineering	31	4.1%	8.1%
Multi-Disciplinary	26	3.4%	6.8%
Law/Pre-Law	18	2.4%	4.7%
Liberal Arts	17	2.2%	4.5%

Five major areas of study account for 55.1% of majors declared by former McAllen grad pursuing higher ed in Texas public institution.

Undeclared	**69**	**9.0%**	**18.1%**

SILSBEE INDEPENDENT SCHOOL DISTRICT
1992-93 Graduating Cohort
(all students with some vocational training fall term)

Number of usable records		**96**		
Successful Outcomes Documented				
Working and/or pursuing higher education (public institution) in Texas	72 75.0%			
Not Located				
Not located via record linkage techniques to available data bases	24 25.0%			
Labor Market Outcomes (post-graduation through fourth quarter 1993)				
Employed in Texas in job covered by state's Unemployment Compensation Act		67 **69.8%**		
Working and enrolled in Texas public higher ed. institution			21 22.0%	
as %-age of those working				31.3%
Working only/not enrolled in Texas public higher ed. institution			46 47.9%	
as %-age of those working				68.7%
Earning more than $2,205/quarter (min. wage X 40 hrs. X 13 weeks)			18 18.8%	
as %-age of those working				26.9%
Employed in the federal civil service			to be inserted here	
Employed by the U.S. Postal Service			to be inserted here	
Entered the Military			to be inserted here	

Top 4 industries by number of job placements for Silsbee grads:

SIC	Industry	Placements	% of grads	% of working grads
54	Grocery Stores	19	19.8%	28.4%
58	Eating & Drinking Estab.	12	12.5%	17.9%
53	General Merchandise Stores	9	9.4%	13.4%
24	Lumber & Wood Products	5	5.2%	7.5%

Four industries account for 67.2% working Silsbee grads located in Texas jobs covered by state unemployment compensation act.

SILSBEE (Continued)

Pursuing Higher Education

Enrolled in Texas public institution of higher ed. (fall term, 1993)	26 27.1%		
Enrolled in Tx public higher ed institution and working in Texas		21 21.9%	
as %-age of those enrolled			80.8%
Enrolled in Tx public higher ed institution but not found working in Texas		5 5.2%	
as %-age of those enrolled			19.2%
Enrolled in Tx public community or technical college		10 10.4%	
as %-age of those enrolled			38.5%
Enrolled in Tx public senior institution (university)		15 15.6%	
as %-age of those enrolled			57.7%
Enrolled in Tx public health sciences institution		1 1.0%	
as %-age of those enrolled			3.8%

Top Texas public institutions of higher education by placements of Silsbee grads:

Institution	# of grads enrolled	as % of all grads	as % of Silsbee grads pursuing higher ed at Tx public institution
Lamar University	11	11.5%	42.3%
Sam Houston State	4	4.2%	15.4%
Lamar Institute of Tech.	3	3.1%	11.5%

Three Texas public institutions account for 69.2% of former Silsbee grads found pursuing higher education in a Texas public institution.

Top five declared majors among Silsbee grads pursuing higher education:

Major area	# of grads enrolled	as % of all grads	as % of Silsbee grads pursuing higher ed at Tx public institution
43	4	4.2%	15.3%
Health Sciences	3	3.1%	11.5%
Business	3	3.1%	11.5%
Undeclared	**7**	**7.3%**	**26.9%**

Three major areas of study account for 38.3% of majors declared by former Silsbee grads pursuing higher ed in Texas public institution.

WACO INDEPENDENT SCHOOL DISTRICT
1992-93 Graduating Cohort
(all campuses/all students receiving some vocational training fall term)

Number of usable records		235	
Successful Outcomes Documented			
Working and/or pursuing higher education (public institution) in Texas	187 79.6%		
Not Located			
Not located via record linkage techniques to available data bases	48 20.4%		
Labor Market Outcomes (post-graduation through fourth quarter 1993)			
Employed in Texas in job covered by state's Unemployment Compensation Act		165 70.2%	
Working and enrolled in Texas public higher ed. institution as %-age of those working			79 33.6% 47.9%
Working only/not enrolled in Texas public higher ed. institution as %-age of those working			86 36.6% 52.1%
Earning more than $2,205/quarter (min. wage X 40 hrs. X 13 weeks) as %-age of those working			31 13.2% 18.9%
Employed in the federal civil service			to be inserted here
Employed by the U.S. Postal Service			to be inserted here
Entered the Military			to be inserted here

Top industries by number of job placements for Waco grads:

SIC	Industry	Placements	% of grads	% of working grads
58	Eating & Drinking Est.	49	20.9%	30.0%
54	Grocery Stores	17	7.2%	10.3%
56	Apparel Stores	16	6.8%	9.7%
53	General Merchandise Stores	14	6.0%	8.5%
73	Business Services	14	6.0%	8.5%
59	Miscellaneous Retail Stores	12	5.1%	6.7%

Six industries account for 73.7% working Waco grads located in Texas jobs covered by state unemployment compensation act.

WACO (Continued)

Pursuing Higher Education

Enrolled in Texas public institution of higher ed. (fall term, 1993)	101 **43.0%**		
Enrolled in Tx public higher ed institution and working in Texas		79 33.6%	
as %-age of those enrolled			78.2%
Enrolled in Tx public higher ed institution but not found working in Texas		22 9.4%	
as %-age of those enrolled			21.8%
Enrolled in Tx public community or technical college		79 33.6%	
as %-age of those enrolled			78.2%
Enrolled in Tx public senior institution (university)		22 9.4%	
as %-age of those enrolled			21.8%
Enrolled in Tx public health sciences institution		0 0%	
as %-age of those enrolled			0%

Top Texas public institutions of higher education by placements of Waco grads:

Institution	# of grads enrolled	as % of all grads	as % of Waco grads pursuing higher ed at Tx public institution
McLennan Com. College	57	24.2%	56.4%
TSTC - Waco	12	5.1%	11.9%
Tyler Jr. College	6	2.6%	6.0%
Texas A&M	6	2.6%	6.0%
UT - Austin	5	2.1%	5.0%

Five Texas public institutions account for 85.3% of former Waco grads found pursuing higher education in a Texas public institution.

Top five declared majors among Waco grads pursuing higher education:

Major area	# of grads enrolled	as % of all grads	as % of Waco grads pursuing higher ed at Tx public institution
Liberal Arts	29	12.3%	29.0%
Health Sciences	14	6.0%	14.0%
Business	11	4.7%	10.9%
Psychology	6	2.6%	6.0%
Engineering	5	2.1%	5.0%

Five major areas of study account for 64.9% of majors declared by former Waco grad pursuing higher ed in Texas public institution.

Undeclared	6	2.6%	6.0%

The record linkage technique which has proved successful for higher education in Texas (since 1990) and for education and training providers in Florida (since 1985) also worked to document results for the Texas public education pilots in Program Year 1993-94. A total of 3,079 useable records were obtained for the eight pilots. The percentage of successful outcomes ranged from a low of 75% to a high of 97.1%. Over all, successful outcomes were found for 82.1% of the former public education students across eight pilot districts.

Labor market results were fairly consistent across the pilots. Those results also were consistent with findings in other states (e.g., Florida) and with the observations and opinions voiced in the theoretic literature. This would lead researchers to hypothesize that comparable results would be achieved in other Texas school districts.

LABOR MARKET OUTCOMES

	Employed in Texas	Working & Continuing to Pursue Higher Ed	Working Only	Earnings > Than $2,205 in Report Quarter	Working in Eat. & Drink. Estab.	Working in Grocery Stores	%-age of Top Five Industries (by Placements) in Service Sector
Low	68.2%	22.0%	28.1%	8.8%	8.2%	6.3%	100%
Median	70.0%	33.3%	36.7%	14.9%	15.1%	9.5%	N.A.
High	87.0%	47.1%	49.1%	22.5%	25.3%	19.8%	80%

EDUCATION OUTCOMES

	Enrolled in Texas Publicly Funded Higher Ed Institution	Working & Continuing to Pursue Higher Ed	Pursuing Higher Education Only	Attending Texas Public Com/Tech College	Attending Texas Public University	Of those Pursuing Higher Ed, %-age Undeclared Major
Low	27.1%	22.0%	2.9%	5.2%	9.4%	0.0%
Median	45.1%	33.3%	11.8%	20.4%	24.6%	16.8%
High	72.9%	47.1%	19.7%	35.0%	44.2%	53.9%

The widest variance among labor market outcomes for the eight pilots was seen in the percentage of graduates who worked while pursuing higher education. That result probably has less to do with the quality of public education the graduates received than it does with regional economic differences. Simple rank order correlation coefficients suggest that economic determinants be explored more extensively. Statewide conclusions can not be drawn from a small number of non-representative districts. Nonetheless, the rank order correlation coefficients computed below were significant at least at the .100 level[4] for the six districts lying within Metropolitan Statistical Areas[3] (MSAs).

Graduates' ability to finance their continued pursuit of education may depend in large part on family income. Seed records did not contain data on individual's family income. (Such data might be available in local data bases and could be retrieved by program administrators for detailed analysis. The next best source of relevant data would be per capita income or median household income for the census tracts served by each district or campus.[5]) In lieu of individual family income data, 1990 DHS estimates of the incidence of poverty for the regions served by each pilot district were ranked in ascending order and compared to the rank order of the pilot district on outcome measures.

Rank Order Correlation Between:	Coefficient	Where n = 6 and p <
Estimated regional incidence of poverty and % of district graduates working during the report quarter	+ .6571	.10
Estimated regional incidence of poverty and % of district graduates working and continuing to pursue additional education and training	+ .6571	.10
Estimated regional incidence of poverty and % of district graduates working only (not pursuing additional education)	+ .7143	.10
Estimated regional incidence of poverty and % of district graduates continuing to pursue additional education only (not working)	- .6571	.10

These correlations suggest that economic need may compel graduates to seek work either to contribute to household expenses and/or to finance their continued pursuit of education and training -- factors beyond the control of education and training providers.

MSA unemployment rates inversely predict potential labor market demands. The greater the demand, the easier it is for recent graduates to find employment. In a "*seller's market*" some recent graduates may believe the opportunity costs (e.g., deferred earnings and the cost of obtaining services) outweigh the delayed benefits of obtaining additional education and training. Rank order correlations for SMA unemployment rates in ascending order were compared to ranked outcome variables.

Rank Order Correlation Between:	Coefficient	Where n = 6 and p <
MSA unemployment rate (descending) and % of district graduates employed during reporting quarter (ascending)	+ .828571	.05
MSA unemployment rate and % of district graduates working and continuing to pursue additional education and training	+ .771429	.05
MSA unemployment rate and % of district graduates working only	+ .942857	.01
MSA unemployment rate and % of district graduates continuing to pursue additional education and training only (not working)	- .771429	.05

These correlations suggest that regional differences in the availability of work may shape the perceived comparative advantages of immediate earnings over anticipated delayed benefits (less opportunity costs) and may explain variance in entered employment rates of recent high school graduates from the pilot districts. To confirm these hypotheses, results from more districts should be analyzed at the regional economic level. Follow-up data files also should be linked to in-house data (if available) on former student/family economic status or census tract economic data. (Note, too, that rank order correlations of economic variables to the percentage of graduates enrolled in publicly funded Texas institutions of higher education lie in the anticipated direction but were not statistically significant. One would hypothesize that stronger correlates will be discovered as the follow-up system expands coverage to document enrollments in private institutions of higher education.)

Among the eight pilot districts, the probabilities for graduates working only (not pursuing additional education and training) were highest in the two communities where the local economy was dominated by a single major employer engaged in production (rather than service) activities – in particular, labor-intensive firms producing natural-resource based goods. Such firms traditionally have employed persons with high school diplomas at comparatively attractive wages relative to the skills required. Food and Kindred Products (SIC 20) – chiefly grain processing – in Hereford and Lumber and Paper Products (SIC 24) in and around Silsbee may account for the greater likelihood that their recent graduates would choose immediate employment over continued pursuit of education and training.[6]

Economists would greet that news with mixed feelings. The long term secular trend for the national and state's economy has been transition from a manufacturing/processing base to service industries. While pockets with high concentrations of manufacturing/processing remain somewhat insulated from those trends, results from six of the eight pilot districts show that the top five industries employing recent high school graduates are concentrated in the service industries. Among all eight pilot districts, job placements in Eating and Drinking Establishments and Grocery Stores were the most likely labor market outcomes followed closely by jobs in other kinds of retail businesses.

Communities where manufacturing/processing jobs are open to recent high school graduates are exceptions to the long term secular trend. Proximity to natural resource based industries gives them a competitive advantage and insulation from long term secular trends. Despite forecasted state and national declines in employment in some of these industries, classical economic theory suggests that such opportunities will occur in isolated pockets so long as the natural resource(s) are available and demand for the product persists. The capacity of manufacturing and processing industries to absorb recent high school graduates in the communities where they are concentrated probably will either remain constant or grow. In the absence of additional education and training, future high school graduates in the more typical communities will face labor market prospects that more closely resemble outcomes in the other six pilot districts: i.e., entry-level employment in the service sector.

	County[°] Coefficient of Specialization[7]	Regional[*] Four Year Employment Growth Rate	Statewide Four Year Employment Growth Rate	Forecast for Employment Growth in Texas to Year 2000	Forecast for National Employment Growth to Year 2005
Food and Kindred Products (SIC 20)	11.68	+ 10%	- 1%	- 1%	- 6%
Lumber and Paper Products (SIC 24)	11.58	+ 52%	+ 8%	no growth	- 3%

[°] For SIC 24, county coefficient of specialization figure for Hardin County which contains Silsbee; for SIC 20, county coefficient of specialization for Deaf Smith County which contains Hereford.

[*] For SIC 20, regional growth figures for Panhandle QWFP Region which includes Hereford; SIC 24 regional growth figures are for Southeast Texas QWFP region which includes Silsbee.

Entry-level employment in service industries (with the exception of Health Services) tends to be low pay with few opportunities for career advancement or earnings gains in the absence of additional education and training. Moreover, because service industries are relatively "*far downstream*" from goods producing activities, they have smaller "*multiplier effects.*" That is, job placements in the service industries do not add as much value to the regional economy as manufacturing/processing jobs because they are less likely to create auxiliary demand for "*spin off*" jobs. And because they are largely "*consumed*" within a region, services are less likely to generate a net flow of income into the region.

The Texas State Comptroller's Input/Output Model, based on analysis of sales tax revenues generated through business activities across industrial sectors, demonstrates the relative capacity of job placements to stimulate additional economic activity within the state. Estimates are not intended to be precise; rather they provide a sense of the order of magnitude for ripple effects across industries. While an education and training provider "*adds value*" to individual graduates by imparting the skills necessary to secure employment in an Eating and Drinking Establishment, the relative value added to the economy may only be one-fourth that expected of the ripple effects that would result from training and placing graduates in higher wage jobs such as with Plastic Products Manufacturing firms.

It also is important to note multiplier effects ripple across the economy from placements in ***newly*** created jobs rather than from replacement of incumbent workers. That is, replacements have no ripple effects other than forestalling potential loss of economic activity had positions not been filled. If the growth-to-replacement ratio is low in entry level service occupations, the value added to the economy for related placements would be considerably lower than those depicted in the chart below.

For every ten job placements in:	Estimated Multipliers (Ripple Effects)		
	Spin-Off Jobs Added to State Economy	Additional Payrolls Generated Statewide	Additional Economic Activity Statewide
Eating/Drinking Estab.	3.2	$ 73,600	$ 358,000
Grocery Stores	5.4	$ 125,000	$ 595,000
Electronics Manufact.	10.0	$ 240,000	$ 1,146,000
Hospitals	12.6	$ 290,000	$ 1,344,000
Plastic Manufact.	12.7	$ 310,000	$ 1,524,000

In Depth Analysis

More detailed analysis of successful outcomes can be done based on variables in the seed records. Data from McAllen ISD are used in the reports below to illustrate the kinds of analyses local program administrators may want to conduct. By engaging in these detailed analyses, they will be able to better determine where problems may have occurred. In particular, they will want to determine how successful they were in tailoring delivery of the curriculum to the different needs and learning styles of special populations in their student mix.

McAllen (all campuses: 1992-93 graduating cohort with some vocational training)

Each cell contains count, as % of column label, and where appropriate as % of specified sub-group	All Cohort			African-American			Hispanic			White		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Number of useable records	765	372	393	3	NA	NA	625	305	320	137	64	73
documented successful outcomes as % of total useable records	596 77.9%	284 76.4%	312 79.4%	NA	NA	NA	480 76.8%	231 75.8%	249 77.9%	113 82.5%	50 78.2%	63 86.3%
Working on job covered by Tx Unemp. Compensation Act	445 58.2%	209 56.2%	236 60.1%	NA	NA	NA	358 57.3%	171 56.1%	187 58.5%	86 62.8%	37 57.9%	49 67.2%
Working & pursuing higher ed as % of total as % of found working in Tx	230 30.1% 51.7%	97 26.1% 46.5%	133 33.9% 56.4%	NA	NA	NA	179 28.7% 50.0%	77 25.3% 45.1%	102 31.9% 54.6%	51 37.3% 59.3%	20 31.3% 54.1%	31 42.5% 63.3%
Working only as % of total as % of found working in Tx	215 28.1% 48.4%	112 30.1% 53.5%	103 26.2% 43.7%	NA	NA	NA	179 28.7% 50.0%	94 30.9% 55.0%	85 20.6% 45.5%	35 25.6% 40.7%	17 26.6% 46.0%	18 24.7% 36.8%
Earning > $2205/qrt within 6 months after graduating as % of total, % found work in Tx	66 8.7% 14.9%	35 9.4% 16.8%	31 7.9% 13.2%	NA	NA	NA	57 9.2% 16.0%	30 9.9% 17.6%	27 8.5% 14.5%	9 6.6% 10.5%	5 7.9% 13.6%	4 5.5% 8.2%
Pursuing higher education at Tx public institution, % of total	381 49.8%	172 46.3%	209 53.2%	NA	NA	NA	301 48.2%	137 45.0%	164 51.3%	78 57.0%	33 51.6%	45 61.7%
Working & pursuing higher ed as % of total as % pursuing hi ed in Tx	230 30.1% 60.3%	97 26.1% 56.4%	133 33.8% 63.7%	NA	NA	NA	179 28.7% 59.5%	77 25.2% 56.2%	102 31.9% 62.2%	51 37.2% 65.4%	20 31.3% 60.6%	31 42.4% 68.9%
Pursuing higher ed only as % of total as % pursuing hi ed in Tx	151 19.8% 39.7%	75 20.2% 43.6%	76 19.4% 36.4%	NA	NA	NA	122 19.6% 40.5%	60 19.7% 43.8%	62 19.4% 37.8%	27 19.7% 34.6%	13 20.3% 39.4%	14 19.2% 31.1%
Attending Tx public community or technical college as % of total, % pursuing higher ed in Tx public inst.	40 5.3% 10.5%	23 6.3% 13.4%	17 4.4% 8.2%	NA	NA	NA	31 5.0% 10.3%	19 6.2% 13.7%	12 3.8% 7.3%	9 6.6% 11.5%	4 6.3% 12.1%	5 6.8% 11.1%
Attending Tx public university as % of total, % of pursuing higher ed in Tx	338 44.2% 88.8%	148 39.8% 86.1%	190 48.4% 90.8%	NA	NA	NA	268 42.9% 89.1%	117 38.4% 85.4%	151 47.2% 92.1%	68 49.6% 87.2%	29 45.3% 87.9%	39 53.4% 86.7%
Attending Tx public health sciences school as % of total, % of pursuing higher ed in Tx public institution	3 0.4% 0.8%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

McAllen ISD (all campuses: 1992-93 grad with some vocational training)

Each cell contains count, as % of column label, and where appropriate as % of specified sub-group	Entire Cohort	Regular Graduation	Advanced Program	Advanced Program with Honors	Finished IEP. employable w/out public school support	Other IEP grad types PEIMS codes 05 and 06
Number of useable records	765	438	212	98	17	Too few cases to report.
documented successful outcomes as % of total useable records	596 77.9%	325 74.2%	182 85.5%	82 83.7%	7 41.2%	
Working on job covered by Tx Unemp. Comp Act, % of total	445 58.2%	267 61.0%	121 57.1%	52 53.1%	5 29.4%	
Working & pursuing higher ed as % of total as % of found working in Tx	230 30.1% 51.7%	101 23.1% 37.8%	86 40.6% 71.1%	41 41.8% 78.8%	NA	
Working only as % of total as % of found working in Tx	215 28.1% 48.4%	166 37.9% 62.2%	35 16.5% 28.9%	11 11.2% 21.2%	NA	
Earning > $2205/qrt within 6 months after graduating as % of total, % found work in Tx	66 8.7% 14.9%	51 11.6% 19.1%	13 6.1% 10.7%	NA	0 0.0% 0.0%	
Pursuing higher education at Tx public institution, % of total	381 49.8%	159 36.3%	147 69.3%	71 72.4%	4 23.5%	
Working & pursuing higher ed as % of total as % pursuing hi ed in Tx	230 30.1% 60.3%	101 23.1% 63.5%	86 40.6% 58.5%	41 41.8% 57.7%	NA	
Pursuing higher ed only as % of total as % pursuing hi ed in Tx	151 19.8% 39.7%	58 13.2% 36.5%	61 28.8% 41.5%	30 30.1% 42.3%	NA	
Attending Tx public community or technical college as % of total, % pursuing higher ed in Tx public inst.	40 5.3% 10.5%	31 7.1% 19.5%	4 1.9% 2.7%	NA	3 17.6% 75.0%	
Attending Tx public university as % of total, % of pursuing higher ed in Tx	338 44.2% 88.8%	128 29.2% 80.5%	140 66.0% 95.2%	69 70.4% 97.2%	0 0.0% 0.0%	
Attending Tx public health sciences school as % of total, % of pursuing higher ed in Tx public institution	3 0.4% 0.8%	0 0.0% 0.0%	3 1.4% 2.0%	0 0.0% 0.0%	0 0.0% 0.0%	

McAllen ISD (all campuses: 1992-93 grad with some vocational training)

Each cell contains count, as % of column label, and where appropriate as % of specified sub-group	Entire Cohort	Limited English Proficiency	Economically Disadvantaged	Special Education	English as a Second Language	Immigrant Bi-Lingual and Pregnant Teen
Number of useable records	765	124	320	39	36	Too few cases to report.
documented successful outcomes as % of total useable records	596 77.9%	96 77.4%	231 72.2%	34 87.2%	26 72.2%	
Working on job covered by Tx Unemp. Comp Act, % of total	445 58.2%	76 61.3%	178 55.6%	12 30.8%	20 55.6%	
Working & pursuing higher ed as % of total as % of found working in Tx	230 30.1% 51.7%	25 20.2% 32.9%	72 22.5% 40.4%	3 7.7% 25.0%	4 11.1% 20.0%	
Working only as % of total as % of found working in Tx	215 28.1% 48.4%	51 41.1% 67.1%	106 33.1% 59.6%	9 23.1% 75.0%	16 44.4% 80.0%	
Earning > $2205/qrt within 6 months after graduating as % of total, % found work in Tx	66 8.7% 14.9%	15 12.1% 19.7%	30 9.4% 16.9%	NA	5 13.9% 25.0%	
Pursuing higher education at Tx public institution, % of total	381 49.8%	43 34.7%	125 39.1%	8 20.5%	10 27.8%	
Working & pursuing higher ed as % of total as % pursuing hi ed in Tx	230 30.1% 60.3%	25 20.2% 58.1%	72 22.5% 57.6%	3 7.7% 37.5%	4 11.1% 40.0%	
Pursuing higher ed only as % of total as % pursuing hi ed in Tx	151 19.8% 39.7%	18 14.5% 41.9%	53 16.6% 42.4%	5 12.8% 62.5%	6 16.7% 60.0%	
Attending Tx public community or technical college as % of total, % pursuing higher ed in Tx public inst.	40 5.3% 10.5%	9 7.3% 20.9%	19 5.9% 15.2%	3 7.7% 37.5%	4 11.1% 40.0%	
Attending Tx public university as % of total, % of pursuing higher ed in Tx	338 44.2% 88.8%	34 27.4% 79.1%	106 33.1% 84.8%	5 12.8% 62.5%	6 16.7% 60.0%	
Attending Tx public health sciences school as % of total, % of pursuing higher ed in Tx public institution	3 0.4% 0.8%	NA	NA	NA	NA	

When successful outcomes among McAllen ISD graduates are disaggregated, there appears to be more variance in results between White and Hispanic students than between females and males within the same ethnic group. Hispanics (particularly Hispanic males) appear more likely than other subgroups to forego additional education and training and to seek and obtain full time employment upon graduation. Conversely, Whites (particularly White females) appear more likely to enroll in postsecondary institutions. If they obtain employment after graduation, Whites seem more likely to do so as a means of financing their continued pursuit of education and as indicated by the higher percentages employed and enrolled in school simultaneously.[8]

Very little variance is seen in the choice of institution type among McAllen graduates enrolling in higher education. The vast majority elected to attend the University of Texas - Pan American campus in Edinburgh. The proximity of that university to McAllen appeared to be more important than either ethnicity or gender. (In fact, proximity, rather than type of institution, appears to be the best explanator of where graduates from all eight districts enroll.)Ethnic-based economic differences in continued pursuit of education and training might emerge, however, if the follow-up system gains access to enrollment information from private institutions whose tuition costs tend to be greater.

Seventeen students in the cohort graduated from McAllen ISD after finishing Individual Employability Plans. The number of cases was too small for detailed analysis. Among regular graduates, graduates of advanced programs, and graduates of advanced programs with honors, there were notable differences in outcomes. As expected, advanced program graduates and those with honor were more likely than regular graduates to continue to higher education; in particular, of those enrolled in institutions of higher education, both subgroups were more likely than regular graduates to attend a university. Perhaps because of the availability of merit-based scholarships, those with honors were by far the least likely to forego continued education for full time work or to work while going to school.[9]

Among special populations[10], too few special education and ESL students graduated from McAllen ISD for detailed analysis. However, of all subgroups analyzed, special education students were the least likely to either find employment or continue their pursuit of education and training. Except for the special education graduates, members of special populations were more likely than their classmates to forego additional education and training to obtain work, particularly at full-time jobs. Limited English proficiency, given the proximity of the district to Mexico, does not appear to be a barrier to employment among McAllen graduates.

Special populations categories are not mutually exclusive; students can be classified as falling into more than one of the categories. Given a sufficient number of cases, local program administrators are advised to compare outcomes for those in multiple categories to outcomes for those meeting only one special populations criteria. Local program administrators also should test for the auto-correlation between IEP graduates and various special populations categories (special education in particular) before attributing significance to presumed relationships.

In analyzing public education outcomes, researchers should be mindful of data limitations:

1) Limitations of records selected for inclusion in the seed files.

a) Inadequate means of distinguishing vocational students from others in the 1992-93 cohort.

Since the follow-up of public education students was funded with Perkins dollars, the primary intent of the study was to document successful outcomes for 1992-93 graduates who had received vocational training. Records were selected where the value in the PEIMS data base for the vocational education variable equalled "1". Unfortunately, the coding standards for submission of data to PEIMS for the 1992-93 cohort failed to distinguish completers of coherent sequences of vocational courses from the *"incidental"*[12] vocational course-takers. The code "1" was assigned to any student who during the reporting "window" in October was enrolled in at least one vocational course. (The code "1" does not even provide assurance that the student completed a vocational course.) In 1993, PEIMS added a separate code for coherent sequence completers. Not until 1994 was another code added to distinguish Tech Prep students. Comparisons of outcomes among regular graduates, vocational graduates, and Tech Prep graduates can not be done on the 1992-93 cohort.

RECOMMENDED ACTION

PEIMS has been asked to correct the extraction routine to add seed records for students not enrolled in a vocational course during the October reporting window for the 1992-93 cohort. In future studies, coherent sequence completers and Tech Prep graduates will be differentiated as new values were added to the vocational education variable in 1993 and 1994 PEIMS standards respectively.

b) Selection of graduates only.

Funding limitations forced selection of graduates only. Therefore the analysis can not address important research questions related to the comparative results for graduates and dropouts.

RECOMMENDED ACTION

PEIMS has been asked to correct the extraction routine to add records for members of each senior class who did not graduate with their cohort and who were not still enrolled in secondary education.

c) Invalid Social Security numbers (SSNs).

Pilot districts were selected because they reported available SSNs to PEIMS. Across the state, SSNs are reported for 87.9% of all public education students (ranging from a high of 100% to a low of 43.8%. Among the eight pilot districts the availability of SSNs ranged from 72.8% to 97.6%.) However, not all SSNs reported to PEIMS are valid nor are all those contained in the administrative data bases linked by record matching techniques. In Program Year 1994-95, the follow-up system will use an edit check routine (derived from SSN assignment algorithms) to capture invalid numbers in seed records. During the 993-94 study, in the absence of automated edit checks, records were discarded as having an invalid SSN only if manual inspection revealed a mismatch between the name entered in the student record and the name entered in the matched UI wage-record.[11]

Biases in missing or invalid SSNs may skew results. Where immigrants are concentrated along the US-Mexico border or in enclaves within the state's urban areas, a disproportionate number of students may not have SSNs. Moreover, it has been suggested by practitioners that sharing of SSNs and/or their fraudulent use may be concentrated among immigrants and in economically depressed areas.

RECOMMENDED ACTION

> Districts reporting SSNs for fewer than 87.9% (the state average) of their graduates should be encourage to be more aggressive collecting that information. District coordinators are encourage to use the edit check software derived from Social Security Administration algorithms as a means of assuring quality control prior to submission of data to PEIMS. This will allow districts to validate and correct SSNs rather than having records discarded as unusable by the follow-up system. Local program administrators are encouraged to use conventional mail and telephone survey techniques to conduct supplemental follow-up on students for whom valid SSNs were not available. Results of these supplemental follow-up should be shared with the SOICC. Only by comparing results for those with valid numbers to the results documented through supplemental follow-up can the system determine response-set biases and devise appropriate statistical corrections in performance calculations.

2) Considering other explanatory variables.

Note in the public education seed record file layout (Appendix II) that several fields were left blank. Upon release of preliminary data analysis to the pilot districts, it was determined by a consensus of site liaison that variables available in PEIMS should be added in the requested rerun: Had the graduate been enrolled in a gifted and talented program? Had the graduate expressed an intent to pursue additional training and education after high school? Had the graduate participated in a Work-Study program? Had the graduate participated in a Cooperative Vocational Education program?

Cooperative Vocational Education program?

Two others variables were considered for inclusion but were not added. While the 1992-93 PEIMS standards included an indicator for student participation in programs to eliminate sex-biases in occupational training, that variable is not available for subsequent cohorts. The liaison elected not to include that indicator because it did not lend itself to comparisons over time to see if such programs were improved. An "*at-risk*" indicator is available for the 1992-93 and subsequent cohorts. After discussion, it, too, was not requested in the rerun because controversy surrounds the varied practices of ISDs in coding their students at-risk. Moreover, proxies for at-risk status could be deduced from more clearly defined and consistently coded special populations variables.

RECOMMENDED ACTION

> Local program administrators are not consider limited to the explanatory variables selected by the System Director and site-based public education liaison for inclusion in seed records. After matching, files are returned to the districts with SSNs neither stripped nor encrypted. This allows the files to be relinked to in-house data bases. As local administrators ask questions not answered by standard follow-up independent variables, they should exercise the option of appending additional explanatory variables to the end of each record and engaging in their own analyses. Results of supplemental analyses should be shared with the SOICC. Where in-house variables explain significant portions of variance in outcomes, recommendations should go forward for their inclusion in all seed records. Where a powerful explanatory variable is unique to a particular district, its statewide adoption in PEIMS should be moved for consideration by the State Board of Education.

3) Determining program level outcomes.

In the absence of an appropriate code value for the vocational education variable, there is no way for the system to differentiate coherent sequence (or program) completers from incidental vocational course-takers. Even when the appropriate code value is available for the 1993-94 graduating cohort, it still will not be possible to disaggregate outcomes by program. While coherent sequence completers will be distinguished from incidental vocational course takers, there will be no way to use PEIMS data, for example, to sort automotive program completers from those in a coherent sequence related to electronic technology.

The difficulty is further compounded by the use of a system unique to Texas for coding course enrollments (the TEA code). Unlike the Classification of Instructional Programs (CIP) system used by higher education and the JTPA system to code courses, TEA course codes can not be translated or aggregated into program level data.[13] Program level information is crucial in determining training-relatedness of job placements. It is the completion of an entire coherent sequence that prepares a student for occupational employment; it would be inappropriate to attribute employability to completion of a single course. In the absence of a method for comparing job placements to ***program*** completion, the occupational titles held by former students (as collected in the employer follow-up survey) are interesting but not susceptible to meaningful analysis. We will be limited, in all practicality, to addressing the question: "Does the completion of ***any*** coherent sequence of courses improve the likelihood of successful outcomes?" Comparisons of outcomes among coherent sequences - even of like title - would be relatively meaningless.

Four possible solutions have been suggested;

a) Manual identification of program completers.

Until the appropriate code values are available in PEIMS data on subsequent graduating cohorts, local administrators may either link returned files to their in-house data bases or ask vocational directors and instructors to manually identify program completers from class records. In most districts this process probably can not be automated immediately and would create inefficiency in the system, uncoordinated and potentially non-standardized analysis, and added burdens on local personnel.

b) Convert from TEA to CIP codes.

Conversion of public education from the TEA coding system to the CIP system would require a massive effort to recode all courses and to update all related report forms, the PEIMS data base structure, and related materials both at the state and local levels plus an exhaustive technical assistance effort to explain the changes. This would be expensive and time-consuming.

c) Develop and continuously update a TEA-to-CIP crosswalk.

The TEA is required to report the use of federal education dollars by CIP code. Work is already done at the agency level to translate TEA codes into their CIP equivalents. While agency personnel constantly validate and improve that crosswalk, technical assistance should be provided to help local administrators/researchers understand and use the CIP coding system to make sense of analyses of training-relatedness for job placements. A program would have to written to scan the CIP codes assigned to courses taken by public education students, determine at the six digit level which CIP program best fit the individual student's pattern, and assign that as the program level variable in PEIMS. Programming would have to be coupled with a substantial development and validation effort.

d) Use of capstone experience course code as a proxy for program level data.

Every coherent sequence of courses is supposed to end with a capstone experience. Each capstone experience has a TEA course code. Rather than scan across all career and technology courses taken by a public education student to determine the best fitting CIP program code assignment, allow the capstone experience to stand as a proxy for the whole coherent sequence taken. The TEA-to-CIP crosswalk would then be needed only to convert the capstone course code into its CIP program level equivalent. From there, determinations of training-relatedness could be made without using more cumbersome file scanning software.

RECOMMENDED ACTION

Use of the capstone/CIP variable would be the most efficient but might be subject to misinterpretation. Great care would have to be taken in the narrative portion of outcome reports to note that the capstone experience was a proxy for the program consisting of the capstone ***and the preceding courses taken in the coherent sequence***; i.e., to avoid attributing employment outcomes to the capstone experience alone.

Another factor complicates the interpretation of program outcomes in public education. That is, each district is allowed to determine (within a narrow range) which combination of courses constitutes a coherent sequence for each program area. There is, for example, no standardized public education program called "Automotive Technology." Therefore, it would be inappropriate, even upon analysis of the entire population of Texas high school graduates for a single cohort, to assert that, statewide, any particular program was successful. Again, care must be taken in descriptive narrative accompanying outcomes analyses.

The most one could say, for example, at the district level would be: *"Among those completing the coherent sequence of courses* ***this district calls*** *'Automotive Technology', those enrolled in the program at Campus X were more likely to find related work after graduation than were those enrolled at Campus Y;"* or *"Among Hispanic males, higher success rates were achieved by those who completed* ***the district's*** *'Automotive Technology' program than by those who completed* ***this district's*** *'Construction Trades' program."*

In such cases, administrators would want to know if the Automotive Technology programs at Campuses X and Y served different student mixes. If not, why was the program on Campus Y, less effective? Were there significant differences in regional occupational demands in the auto repair and construction industries? If not, why was the Automotive Technology program more effective in delivering services to the Hispanic male subgroup?

In making cross-district comparisons, inferences would have to be limited to such statements as: *"Completers of* ***what District X called*** *'Automotive Technology' were more likely to obtain full time employment after graduation than were completers of* ***what District Y called*** *'Automotive Technology.'"* Perhaps District Y should consider realigning its Automotive Technology curriculum to match the coherent sequence adopted under that title by District X. (Perhaps after comparison of results by neighboring districts, local variations in program definitions will disappear – not by imposition of statewide uniform definitions, but because best practices will be identified and emulated.

Patterns of Occupational Employment Among Recent High School Graduates

Patterns of occupational employment among high school graduates from pilot districts' 1991-92 cohort are offered as "interesting" – but not "conclusive" – findings. Again, one must remember that the districts were selected from a pool of volunteers and were not representative of the state's public education system. Nonetheless, results were predictable.

While 75% of the public education completers found work after graduation, 32% did so on a full-time basis. Of the entire graduating cohort for all eight pilot districts, less than one-fourth secured full time employment. Of those who worked full time for the full reporting quarter, average quarterly earnings were $ 2,277 (only 3.3% higher than minimum wage). Employment was most likely to be found in the service sectors; 53% were employed in five service industries: Eating and Drinking Establishments (21%), Food Stores (11%), General Merchandise Stores (9%), Business Services (7%), and Apparel/Accessories (5%). The occupations most commonly open to 1991-92 pilot district graduates (both part time and full time) were: Retail Salesperson, Cashiers, Food Preparation Workers, Waiters/ Waitresses, and Helpers/Laborers.

The best use of these data would be to use them in career counseling. By comparing public education and higher education outcomes by entered employment rates, percentage of subjects obtaining full-time/full quarter employment, and average quarterly earnings for full-time/full quarter employment, the data demonstrate that employers prefer to individuals with higher competencies than can be attained and demonstrated by high school graduates. While there are exceptions, higher paying jobs are available to persons with some college. As educational attainment levels increase, so do potential earnings.

Earnings Levels for Samples of 1991-92 Graduates in the Employer Follow-Up Survey
for Employees Identified as Full Time/Full Quarter

	Annual	Hourly		Annual	Hourly
High School Pilots	$ 9,096	$ 4.37	JTPA Title IIA	$11,428	$ 5.49
Com/Tech College Certificate	$16,140	$ 7.76	JTPA Title III	$17,428	$ 8.38
Com/Tech Associate Degree	$23,312	$11.21			

This is not a criticism of the public education system. Rather, it reflects the realities of the labor market where Texas firms must compete globally. Public education has no control over employer demands and expectations. Occupational employment outcomes for recent graduates, therefore, are better used for motivating students to continue their pursuit of education and training after high school. In evaluating the performance of public education, it may be wise to consider giving more weight to indicators of graduates' abilities to gain admission to and successfully complete more advanced education and training. To that end, public education practitioners have suggested that future follow-up studies include matching seed records to such things as TAAS, ACT and SAT scores as indicators of their preparedness for higher education. Such outcomes information might be more meaningful to public education because it relates more directly to the factors over which practitioners have some degree of control.

It is the SOICC's long range plan to include follow-up data aggregated to the program level to add "*track record*" information and "*likely outcomes*" to the SOCRATES (planning) and Texas CARES (automated career information delivery system) programs to guide and motivate prospective students and adult learners in their career decision-making.

Results for the JTPA System

The primary reason for conducting a pilot study for the JTPA system in Texas was to obtain follow-up data through the automated record linkage technique and compare results to those obtained through traditional telephone survey techniques by Texas A&M University under contract to TDoC. Do both methods yield similar findings? Are the differences, if any, significant? What would be the benefits of replacing the traditional telephone survey with automated follow-up? What, if any, would be the disadvantages?

Comparisons of data collected by the two methods on the same cohort of JTPA leavers reveals that nearly identical results are obtained. Automated follow-up found 369 more former participants (14%) employed in the matched quarter than did the telephone survey conducted by Texas A&M University at the thirteenth week after program termination. Automated follow-up also identified 289 persons (11%) who were not included in the TEC UI wage-records in the report quarter but who, at the thirteenth week, told Texas A&M interviewers that they were employed. (In sum, the record matching technique provided the JTPA system with a net 3% gain in the number of documented successful outcomes.) For more than 75% of the JTPA Title IIA participant cohorts studied, automated follow-up and the telephone survey obtained the same results. Any differences in findings between the two methods, therefore, are insignificant.

Data collection timeframes and definitions of employment can account for most differences. For those found in the UI wage records but who reported themselves unemployed, differences may be explained by the timeframes covered in the data. Both results could be true for participants whose employment status changed and for whom the 13th week Texas A&M survey did not fall in the 4th quarter of 1993. For those who reported themselves employed but who were not located in the UI wage records, there are two possibilities. First, as above, employment statuses may have changed between the two data collection points. The other possibility: they were employed during both timeframes but the jobs held did not meet the employment criteria for inclusion in the UI wage records, i.e., employment in a job covered by the state's Unemployment Compensation Act.

		4th Quarter 1993 UI wage-records	
		Not employed in a job covered by Texas State Unemployment Compensation Act	Employed in a job covered by the Texas State Unemployment Compensation Act
Texas A&M University Telephone Survey of Former Participants at 13th week after termination	Self-Reported Not Employed	607	369
	Self-reported Employed	289	1,422

T (test statistic) = 13.8; chi-square with one degree of freedom at $p < .001$ is 10.83

Given the comparability of findings, we conclude that automated follow-up results are as reliable as those obtained by the telephone survey technique. Additional questions must be addressed before a policy decision can be made regarding a request to the Department of Labor (DOL) for a waiver to substitute automated follow-up for the traditional survey.[14] The chart below outlines the basic considerations.

	Automated Follow-Up	13th Week Telephone Survey
Data Source(s)	Administrative records + employer survey	Self-reported/Unverified
Cost	Less than $.50 for automated matches; approx. $5.00/record for inclusion in employer survey	Estimated at $13.26/record
Timeframe	Single point in time: 4th quarter	Continuous: 13 wks after exit
Availability	Five months after close of 4th quarter	Quarterly/year-end reports
Employment Outcomes	Yes	Yes
Earnings Information	Quarterly earnings and FT/FQ flag	Hourly wage (unverified)
Participant Satisfaction	No	Yes
Continued Education	Match to Coordinating Board Master Files	No
Capacity to identify long term outcomes	So long as participant remains in covered employment in Texas, military, fed civil service, postal service, Texas higher education, or surrounding state with data sharing agreement, any longitudinal wave will obtain data	Significant decline in the number of participants reached by telephone as accuracy of contact information in the participants' files decreases over time.

The second major purpose for inclusion of JTPA programs in the 1993-94 pilot study was to identify barriers to coordinated program planning and evaluation. Conforming amendments in the JTPA and Perkins Acts, the Texas Workforce and Economic Competitiveness Act, and proposed reforms all call for increased integration and coordination of workforce development programs – including integrated planning and evaluation. To the extent that data definitions and performance calculations were established independently by the various state agencies prior to the push, existing practice may impede coordination.

One JTPA program evaluation practice in particular was inconsistent with those used by other workforce development agencies participating in the 1993-94 follow-up study. Like public education and higher education, the JTPA system conceptually defines training-related placements as successful outcomes; in Texas, it differs in its operational definition of training-relatedness. Whereas other service providers assign a training program codes to participant interventions and occupational codes to employment outcomes, the JTPA system assigned an occupational code to outcomes ***and interventions***. That is, the JTPA system records the OES-of-training as the code representing services received and the OES-of-placement for employment outcomes. Higher education, on the other hand, assigns a CIP code to the training provided and an OES code to employment outcomes.

Coding practices in this case make a significant difference in the way program performance is calculated. To receive a positive score for training-related placements, there had to be a one-to-one correspondence between the JTPA participant's OES-of-training and OES-of-placement. Placements in similar (but not identical) jobs for which they were trained were not counted as successful outcomes. For each CIP code, however, there may be more than one related occupational title. Using the CIP system to code training services provided, therefore, increases the likelihood that job placements will be considered training related. Other workforce development partners using the CIP coding system will appear to have better performance ratings on the training-relatedness measure. That would put the JTPA system at a decided disadvantage when cross-program comparisons are made in an integrated evaluation system.

A simple example illustrates the problem. An SDA purchases automotive training off-the-shelf from a local community college on behalf of a JTPA participant. Upon program completion, the participant secures employment as a diesel mechanic. The participant is included in both the JTPA and community college follow-up.

Entity	Training Code	Outcome Code	Training-Related?
JTPA SDA	OES = 85302	OES = 85311	No
Community College	CIP = 740603	OES = 85311	Direct Relationship

Same individual/same training/same outcome would be rated differently for no other reason than the differences in data coding practices.

Consistency for the sake of cross-program comparisons in an integrated program evaluation system could be achieved either by asking the JTPA system to code training services according to the CIP system or by asking the community colleges to use OES-of-training codes. Conversion of the JTPA system to CIP codes better reflects both the way the curriculum is designed and the structure of employment opportunities. Most programs (outside those for licensed and regulated occupations) impart a broad enough range of competencies to prepare graduates for a cluster of related jobs. Employers, in turn, hire applicants whose combination of competencies provides a *satisfactory* fit with job requirements and whose aptitudes and interest suggest that they can quickly acquire all other related competencies. Requiring a one-to-one correspondence between OES-of-training and OES-of-placement ***under***estimates the portability of competencies across a cluster of related occupations and ***over***estimates the rigidity of employers' applicant-screening and job-assignment practices.

An *ad hoc* group consisting of the Follow-Up System Director, the employer survey subcontractor and SDA/follow-up liaison (led by Mary Ross of the West Central Texas Council of Governments) brought this matter to the attention of Jim Boyd, Director of Workforce Development Division, TDoC. Mr. Boyd and his staff reviewed the data, considered the illustration provided, and compared performance calculations. They concurred with the recommendation to convert the TDoC's management information system to the use of CIP codes for instructional services rendered to JTPA participants.

Mr. Boyd also determined that conversion to CIP codes would be practical insofar as providers of off-the-shelf training programs purchased on behalf of JTPA participants already used the CIP coding system and could supply that information when contracting with the SDAs. Moreover, the DOL guidelines permitted (and its chief administrators advocated) conversion to the CIP coding system. In a Standardized Program Information Report memorandum to state JTPA directors, the DOL announced:

> *The CIP was chosen as the preferred coding system for classroom training programs because it is the only classification system... specifically designed to describe and code educational programs. Even "occupationally-specific" educational programs tend to prepare for a job family or cluster of occupations with related competencies rather than for a single occupation. Generally, it is not advisable to try to assign a single occupational code to an educational training program.*[16]

JTPA SDA directors and MIS coordinators were notified of TDoC's intent to convert to CIP codes. Programming changes were made in the MIS. SDA administrators were notified of the change and arrangements for technical assistance were made before the close of the program year per the memorandum reprinted on the following page. The technical assistance rendered to TDoC and the agency's prompt response will increase SDA acceptance of the follow-up system and the likelihood that outcomes information will be used properly and fairly in an integrated program evaluation process.

STATE OF TEXAS
DEPARTMENT OF COMMERCE
MEMORANDUM

TO: SDA Administrative Entities

FROM: Joan Kotal

DATE: June 21, 1994

SUBJECT: CMS: NEW CIP/FICE CODE INFORMATION

The JTPA Data Analysis Committee chaired by Mary Ross of West Central Texas COG, in conjunction with the SOICC Student Follow-up Project, has brought to the forefront the importance of comparing the training-relatedness of JTPA placements to other partners in work force education and training programs. The committee concluded that a comparison of the JTPA OES activity/training/ placement codes to the educational/training codes does not allow for an adequate assessment of the relationship of placements to the training activity. The use of the Classification of Instructional Programs (CIP) code system to allow multiple training programs to correspond to an Occupational Employment Statistic (OES) job placement is necessary for accurate evaluation. The educational institution/training provider is assigned a FICE code, which will be collected to facilitate future evaluation of institutional effectiveness.

The Client Management System (CMS) will be modified in the conversion process to include both the CIP and the FICE code in the CMS Software Participation Module and the Participant Coding Sheet effective PY94. The CIP code will be used in conjunction with the OES code to classify JTPA training activities, excluding On-the-Job training participants which only requires an OES code. The OES code will continue to be collected for placement. Because many participant coding sheets are completed by the educational institution/training provider, it should not be difficult to obtain the CIP and FICE codes by the local JTPA program operators.

A list of CIP codes and examples of how the CIP code relates to the OES code are included for review. The CMS system will have the CIP data available as a choice screen in the Participation Module, but the FICE code should be provided by the educational institution. If you have questions, or need further information, please contact Teresa Alvarez at (512) 320-9813.

JK:ta

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Results for JTPA varied significantly across titles. The variance was not unexpected given the different goals, objectives and eligibility criteria for each program.

JTPA PARTICIPANT OUTCOMES
Program Year 1992-93

	Number	Enrolled in Higher Ed Fall Term	Employed in 4th Quarter 1993	Employed & Enrolled in Higher Ed	Either Employed or Enrolled
Title IIB: Summer Youth Programs	50,815	8%	29%	3%	33%
Education Coordination Plans	9,161	5%	30%	1%	30%
Older Worker Program	2,275	1%	41%	0%	42%
Title IIA: Economically Disadvantaged Youth	22,430	7%	42%	4%	45%
Title IIA: Economically Disadvantaged Adults	15,795	6%	64%	4%	66%
Title III: Dislocated Worker Program	12,912	7%	72%	5%	74%

The Title III program is designed for rapid deployment of resources to help dislocated workers reenter the labor market as soon as possible after plant closures and large scale layoffs. Title III participants already have work histories and are more likely than those in other JTPA programs to have relatively high levels of education and competencies acquired through experience. As expected, that program had the highest rate of successful labor market outcomes: 72% found work and annualized earnings were more than 50% higher than for Title IIA program completers who found full time work. At the other end of the spectrum are various JTPA youth programs. These are designed largely to keep at-risk youth in high school and to provide dropouts with the GED. Enrollments in higher education are low because youth program completers may not yet be of college age by the start of the subsequent fall term. Additional automated matches are recommended to give a better picture of youth program successes:

- JTPA IIB youth program seed records should be matched against TEA PEIMS data to determine what percentage completed their high school education within one, three and five years after receiving services.

- JTPA IIB and IIA youth program seed records should be matched against administrative records to determine what percentage earned a GED within one, three, and five years after receiving services.

- JTPA IIB and IIA youth program seed records should be matched against higher education enrollment records again at the three and five year intervals to determine what percentage subsequently sought additional training and education.
- Pre-enrollment/post-exit outcomes should be compared to determine the earning gains made by Title IIA (Adult) and Title III program completers.

JTPA participants are often eligible for multiple services. In Title IIA Adult programs, for example, some participants engage in their own job search activities independent of JTPA provided services. Under family or financial pressure to enter the labor market, they may take jobs before completing JTPA-provided occupational skills training. However, follow-up data indicate that those who use the full compliment of services were most likely to have successful labor market outcomes.

JTPA Interventions Mix of Services		Received Job Placement Assistance	
		No	Yes
Completed Occupational Skills Training Program (Each cell shows Number of participants, % employed, average quarterly earnings	No	4,020 42% $1,944	3,645 70% $2,653
	Yes	1,751 52% $2,467	6,379 78% $3,517

SDA administrators are encouraged to conduct comparable analysis for their other multiple intervention services to determine which combinations produce the highest success rates. In particular, they should examine the impacts of needs-based payments and varieties of special support services.

Because, on average, participants in Title IIA and Title III programs were older than subjects in the public education pilots, many already had a high school diploma or GED. Age and experience may explain why former JTPA participants were placed in a different mix of industries and occupations than were graduates from the public education pilot districts.

JTPA TITLE IIA		JTPA TITLE III	
Top 5 Industries by placements (per UI wage record match)	Top 5 Occupations by placements (per Employer Survey)	Top 5 Industries by placements (per UI wage record match)	Top 5 Occupations by placements (per Employer Survey)
Health Services 14%	Helpers/Laborers	Business Services 13%	General Office Clerks
Business Services 13%	Cashiers	Health Services 7%	Secretaries
Eat/Drink Estab. 11%	Nurses Aides	Wholesale Trades 6%	Truck Drivers
Food Stores 5%	General Office Clerks	Educational Services 6%	Retail Sales Persons
Educational Services 4%	Retail Sales Persons	Government 5%	Helpers/Laborers

SDA administrators should use these outcomes data to validate the logic used in planning services. Appendix IV gives more detailed instructions.

Results for Higher Education

Major Findings

For the third consecutive year, automated follow-up has documented successful outcomes for 85% or more of the community and technical college cohorts studied. Of the students in the 1992-93 School Year followed under this grant, 87% were either employed and/or continuing to pursue additional education and training.

In the table on the next page, results are broken out by graduation type. All graduates of community and technical college in the state were followed. They included academic, technical and tech prep graduates. All academic and technical non-returners also were followed. Six community colleges participated in the adult vocational follow-up. They were:

Amarillo College Brazosport College Del Mar College
El Paso Community College District McLennan Community College
North Harris/Montgomery Community College District

Six Universities participated in the 1993-94 pilot. They were:

East Texas State University Lamar University
University of Houston - Clear Lake The University of Texas -Dallas
The University of Texas - Pan American West Texas A&M University

1992-1993 School Year Cohort	Pursuing Additional Ed. Only	Employed	**Both**: Working + Add. Ed.	Total[*]: Employed or in School
Adult Vocational - 6 pilot colleges (N = 19,110)	3% 504	69% 13,159	8% 1,474	79% 15,137
All Com/Tech College Graduates (N = 32,086)	7% 2,246	80% 25,669		87% 228,129
Academic Graduates (N = 8,221)	16% 1,294	29% 2,412	43% 3,560	88% 7,266
Academic Non-Returners (N = 242,052)	8% 19,786	52% 127,052	25% 61,568	86% 208,406
Technical Graduates (N = 23,721)	4% 989	68% 16,089	14% 3,325	86% 20,403
Technical Non-Returners (N = 138,579)	4% 5,231	68% 93,843	13% 18,075	85% 117,149
Tech Prep Graduates (N = 144)	4% 6	73% 105	10% 14	87% 125
Universities - 6 pilots (N = 8,561)	3% 229	73% 6,268	12% 1,062	88% 7,559

[*] Totals subject to rounding errors. Source: Texas Higher Education Coordinating Board

Of those pursuing additional education, type of transfer institution varied by category of community and technical college major pursued.

Of Students Pursuing Additional Education:	Returned to Same Institution for Additional Education	Transferred to Another Community or Technical College	Transferred to a University or Health Science Center	% Full Time
Academic Grads (N = 4,854)	19%	4%	77%	59%
Academic Non-Returners (N = 19,786)	N.A.	21%	79%	72%
Technical Grads (N = 4,314)	65%	11%	30%	70%
Technical Non-Returners (N = 5,231)	N.A.	42%	58%	54%
Tech Prep Grads (N = 20)	85%	5%	35%	65%

Technical graduates who transferred to universities or health science centers were most likely to major in Registered Nursing (501); Undeclared (323); Business Administration and Management (216); Respiratory Therapy (160); Practical (LPN) Nursing (143); Administrative Assistant/Secretarial Science (130); Criminal Justice (126); Accounting (114); General Business (111); and Computer Science (110).

Academic graduates who transferred to universities or health science centers were most likely to major in Multidisciplinary Studies (482); Undeclared (361); Business Administration and Management (356); Accounting (270); General Business (253); Psychology (235); Registered Nursing (214); Biology (144); English (143); and Health and Physical Education (112).

Of those from the 1991-92 cohort entering the labor market, 58% were employed in 10 industries in the service sector: Health Services, 35,964; Eating and Drinking Establishments, 31,742; Educational Services, 28,473; Business Services, 27,033; General Merchandise, 12,708; Food Stores, 12,708; Miscellaneous Retail, 11,116; Federal Government, 10,828; Social Services, 10,143; and Apparel and Accessories, 8,564. According to the Employer Survey, the top five jobs held by community and technical college graduates and non-returners who entered the labor market full time were: Registered Nurse, Licensed Practical Nurse, Respiratory Therapist, General Office Clerk, and Secretary.

Changes at the Leading Edge of Follow-Up

Higher education has participated longer in automated follow-up than the other workforce development partners. Coordinating Board staff members compute statewide success measures and distribute data files to each institution of higher education. Each college or university has at least a half-time institutional researcher qualified to use the data in compliance reports, self-studies for accreditation, and internal planning for continuous program improvement. At the system level, their experience and expertise is no longer focused on the mechanics of automated record linkage. Rather, they are beginning to address more sophisticated and detailed questions pertaining to the improvement of follow-up itself.

Improving the Breadth of Coverage

Higher education practitioners took the lead in the Steering Committee and in informal discussions to improve the breadth of coverage for the follow-up system. Whereas in seed records only from nine volunteer community and technical colleges were included in the employer follow-up survey during Program Year 1992-93, the Coordinating Board extracted seed records for all graduates (of both academic and technical programs) and a sample of non-returners from all 49 technical and community colleges in Program Year 1993-94. Five universities joined East Texas State University (from the prior year) in the match against higher education master enrollment files and the UI wage records. An attempt was made to devise a method for ascribing outcomes to adult vocational programs.

Practitioners from institutions on the perimeter of the state, particularly Dr. Mike Wolf of El Paso Community College, were helpful in contacting surrounding states' officials to begin negotiations on data sharing agreements. Members of the LoneStar Data Users group coordinated activities with the Follow-Up System to improve the quality and coverage of information available at the campus level either for inclusion in the basic follow-up seed records or for detailed analysis when returned files are linked by institutional researchers back to in-house data bases. In particular, Dr. Stan Adelman was a persistent advocate for the use of student intent information on file within the institutions in the analysis of outcomes. Members of the Electronic Transcript Group were influential in developing linkages that will allow institutional researchers to examine grades earned at transfer institutions as outcomes; i.e., as indicators of the preparation received at the institution exited. Richard Bailey, Dr. David Preston and Dr. Mike Green were particularly helpful in explaining the parallels between automated student follow-up and electronic transcript analysis. Their work convinced public education practitioners of the need to examine student intent to enroll in college when analyzing outcomes and examining their graduates' TAAS scores as indicators of college preparedness.

Don Perry, President of TAPSOEA and Steering Committee representative from the Dallas County Community College District, was the first to voice concerns about the way gaps in UI wage record coverage disproportionately effect programs which prepared students for occupations in traditional areas of self-employment: e.g., Cosmetology, Real Estate, and Music. TAPSOEA members were instrumental in the System Director's efforts to devise supplemental follow-up procedures in collaboration with Coordinating Board staff.

> *Supplemental follow-up procedures allow institutions/service providers to document successful outcomes for former students not located in the linked records tapped by automation. Seed records would be returned to institutions along with instructions or software for extracting the* "exceptions list" *of persons not located. Institutions would have the option of conducting follow-up through conventional telephone and mail survey techniques to locate former students at last known point of contact. Institutions would be given a deadline for the return of verifiable information in a standardized format. The format would require submission of data items comparable to those obtained for other students via record linkages and the employer follow-up survey. Until the deadline, all successful outcome rates would be released as* "preliminary – subject to supplemental follow-up." *After the deadline, verifiable supplement data would be used to recompute all institutions'* "official" *successful outcomes ratings.*

Coordinating Board staff, led by Helen Giraitis and Dr. David England, were persuasive in expansion of the conceptual definition of successful outcomes to include transfers to private institutions of higher education. Ms. Giraitis, on behalf of the Coordinating Board and the follow-up system, began negotiations with volunteer private institutions for the exchange of information in a mutually acceptable format and for cooperation and collaboration in future follow-up studies.

Degree of Automation

To the extent that negotiations for access to data bases (such as private institutions of higher education) extending the breadth of coverage are successful, automated record linkages will replace traditional survey techniques to locate an ever increasing portion of subjects being studied.

Funds from the Program Year 1993-94 grant were used to purchase a desktop computer for the Coordinating Board and a tape drive for the SOICC. These purchases increase the capacity of both parties to process information requests.

Improving the Depth of Coverage

The Perkins Committee of Postsecondary Practitioners and higher education members of the Follow-Up Steering Committee initiated discussions about the use of longitudinal research to determine: pre-enrollment/post-exit employment gains; post-exit employment retention; post-exit earnings gains; and long-term career advancement. These advances await approval of additional funding in subsequent program years.

Tool Development

Dr. John Grable (President, Brazosport College), Dr. Stanton Calvert (Executive Director, Texas Jr./Community College Association) and Dr. Milton Holloway (economist) took preliminary steps to measure the value added by training providers to their students and to the economy as means of calculating returns on the investment of public dollars in education and training.

Dr. Susan McBride (Northeast Texas Community College) and Dr. Darlene Morris (Texas State Technical College System) were among the first to take issue with the crosswalk used to determine the degree of training-relatedness of job placements in the Program Year 1992-93 study. The System Director, in collaboration with the Follow-Up Steering Committe, devised a method for continuous validation and updating of the CIP-to-OES crosswalk.

> *Initial crosswalk validation was performed by community and technical college administrative and instructional personnel (along with Lorraine Merrick's staff in the Career and Technology Education Division, TEA). Each campus was supplied with a data disk containing all portions of the crosswalk pertaining to the programs offered thereon. Administrators and instructors also were provided a software package that invited them to recommend and justify the addition, deletion or reassignment of values in the crosswalk. In addition, an* entry level/career ladder *relationship was created to give credit to training programs that prepare student for work in fields where firms traditionally under-employ new entrants into the business or industry. Practitioner input was used to refine the CIP-to-OES crosswalk for use in the 1993-94 study.*

Continuous improvements in the crosswalk will be made as a result of a challenge process devised by the System Director. As employers supply occupational titles, the subcontractor uses the most current version of the crosswalk to compute preliminary *training-relatedness scores. Records are returned to the institutions for internal review. Program administrators and instructors will be allowed to challenge the training-relatedness score assigned to any former student's job placement. There are three grounds for challenging a training-relatedness score:*

a) Upon contacting the student, the institution learned that competencies acquired in a program are used in an unpaid volunteer position. (For example, a former medical technology student employed during the day as an accountant volunteers as a paramedic.)

b) Upon contacting an employer, the institution learned the duties and tasks performed by its former student were assigned an improper OES code. When a more appropriate code is assigned, a higher degree of training-relatedness can be attributed to the job placement. (For example, more details were learned about the duties of a "Technician Not Elsewhere Classified." That resulted in recoding the title to "Chemical Technician." The job placement was given a "Direct Relationship" rating as an outcome for a Chemical Technology program graduate.)

c) Upon review of duties and tasks involved in an occupation, there is evidence that a genuine relationship between a training program and an occupation was overlooked by all who participated in Validating the crosswalk.

Challenges would be submitted to the SOICC by a deadline. Explanations would be reviewed by a panel of practitioners. Challenges would be stripped of personal and institutional identifiers to insure that the panel judged each case without consideration of self-interest. On a majority vote, the panel would take one of three actions:

1) If the challenge was rejected, the training-relatedness score and the crosswalk would remain unchanged.

2) If the challenge was accepted under conditions (a) or (b), the individual training-relatedness score would be changed (thus improving the program and institution's overall score on that performance measure); the crosswalk would remain unchanged.

3) If the challenge was accepted on the grounds that the crosswalk was in error,
- *the individual score would be changed;*
- *the program and institution's success rates would be recalculated;*
- *the crosswalk would be updated; and*
- *the software routine to assign training-relatedness scores would be rerun to give like credit to all individuals, programs and institutions where the identical combination of CIP and OES codes was recorded.*

Any release of training-relatedness calculations prior to the deadline and panel review would be listed as "preliminary – subject to institutional challenge". *Recalculations with the updated crosswalk would be considered* "official."

Higher education representatives on the Steering Committee, an *ad hoc* committee of higher education follow-up data users, and the Perkins Committee of Postsecondary Practitioners took the lead in advising the employer survey subcontractor on methods for analyzing patterns of geographic mobility in former students' job search activities. Drs. Wolf, Adelman, and England helped devise ways to make fair comparisons of entered-employment earnings to earnings information for both the region in which the training was provided and in the region where employment was secured.

Dr. Ron Hufstuttler, Vice President, East Texas State University, used his analysis of pilot study results to challenge the linear model of education and training pathways. He discovered a significant portion of his institution's leavers transferred to community and technical colleges. He suggested the need to develop more sophisticated tools to determine how students put together their own "*program*" by mixing community/technical college, baccalaureate, continuing education, and graduate courses with work-experiences to acquire unique combinations of skills and competencies required for employment and/or employment retention in a constantly evolving labor market.

Utilization

Practitioners on the Steering Committee are called upon frequently to present follow-up information to decision-makers who have no particular training in evaluation research or statistics. They were instrumental in ensuring greater utilization of follow-up information by insisting that it be presented in easy-to-understand report cards and graphical formats.

Members of the Steering Committee who held offices in associations for higher education professionals used their influence to secure spots on workshop, seminar and conference agendas for follow-up staff and liaison. Don Perry handled arrangements for the TAPSOEA fall conference; Mary Korfhage handled arrangements for a Student Tracking Workshop in Richardson and the annual TAIR conference. These opportunities were used to explain follow-up and to render technical assistance to encourage wider acceptance of the system and the use of its data in continuous program improvement.

Dr. John Grable arranged for a joint presentation with the System Director at the annual conference of the American Association of Community Colleges. Such appearances before national groups foster increased utilization of follow-up data by ensuring that its methodology generates data that can be used fairly and objectively in cross-state comparisons. They also set the stage for improved collaboration and cooperation among practitioners across the nation to resolve common technical issues. Greater visibility - in particular after an award was presented to Dr. Grable by the AACC for his innovative approach for a data-driven process of continuous program improvement - ensure that Texas will remain among the leaders in follow-up and evaluation research.

5) Communications and Outreach

The System Director, employer survey subcontractor and the tri-agency grant management team participated in professional association activities related to follow-up, organized three regional workshops and a statewide conference, and engaged in other discussions intended to increase the likelihood that data from the follow-up system would be used in a process of continuous program improvement. Communications consisted of:

- negotiating system expansion;
- rendering technical assistance; and
- building consensus.

Negotiations were successfully concluded for expansion of the follow-up system in Program Year 1994-95 for accessing the following:

- federal civil service on file with the Office of Personnel Management;
- employment records on file with the US Postal Service;
- military personnel records on file with the Department of Defense; and
- UI wage-records on file with the New Mexico Employment Security Agency.

Additional negotiations are underway with the Oklahoma's Board of Regents and Employment Security Agency.

Limited arrangement also may be made with Alaska, Arizona, Florida, Illinois, North Carolina, and North Dakota. While few hits are expected from matches against these data bases, the arrangements will set the stage for establishing a national employment information clearinghouse.

Within the state, briefings were conducted with the Intergovernmental Relations unit of TEC and with the Evaluations Unit of the Texas Department of Human Services. TEC pledged its continued support as a provider of outcomes information. DHS entered into negotiations to have the follow-up system collect outcomes data for the JOBS and Food Stamp Employment and Training Programs. DHS also is considering its role as a provider of outcomes information related to decreased welfare dependency among participants who complete workforce development programs. Negotiations have been initiated through Windham School staff to gain access to corrections information.

Technical assistance was rendered in the fall to practitioners at site-based committee meetings at five locations across the state (Amarillo, Beaumont, Houston, Lancaster, and McAllen). At those meetings, the System Director explained the basics of follow-up to new constituents from the JTPA system and public education. He relied on experienced higher education practitioners at each site to give practical examples of the uses they made of follow-up data. Each site-based committee member was charged with the responsibility of explaining follow-up to other practitioners at the institutions they represented and to their peers through professional association activities.

By spring, once new issues had been addressed and as new activities were added to or planned for the follow-up system, there was a need for additional technical assistance. Three regional workshops were held (Houston, Dallas and San Antonio). At each, an orientation was conducted by the System Director to acquaint newcomers with the basics of follow-up. The General Session of each workshop was opened by a recognized local practitioner whose prestige, testimonial and endorsement added to the credibility and acceptance of the follow-up system. The System Director, the employer survey subcontractor, tri-agency liaison, and practitioners made presentations on general policy and technical issues. Representatives from all three constituencies, by participating together, "*cross-fertilized*" each other in the sense that they identified areas of mutual concern and came to appreciate the need to understand follow-up information about their partners' programs.

Barbara Cigainero, Executive Director of TCWEC, and Nancy Atlas, Chairperson of the Higher Education Coordinating Board, opened the statewide conference in Austin in June. The balance of presentations focused on results of the 1993-94 studies and plans for the 1994-95 Program Year. The conference, like the regional workshops, was successful in generating increased interest in and enthusiasm for expansion of the follow-up system. In addition to representatives from the three current constituencies, the conference was attended by:

representatives of the Texas Department of Human Services;

representatives of the Texas Employment Commission;

TCWEC members and staff;

representatives of the Governor's Office, the Legislative Budget Board, legislative aides, and the State Comptroller's Office; and

out-of-state delegations from Oklahoma, Arkansas, Arizona, and Illinois.

Invitations were issued to out-of-state parties as part of a larger effort to learn from and to build consensus among all persons engaged in follow-up activities within and out-of-state. To the extent that common definitions and parallel methodologies are developed, utilization of follow-up information will increase because the system will produce meaningful information that can be compared fairly with data acquired by all the state's workforce development partners and by parallel authorities in other states. To this same end, the System Director participated in the following:

> (with Dr. Jim F. Reed, employer survey subcontractor) attended a national workshop on performance measures and standards under the Perkins Act;
>
> organized an *ad hoc* committee of nationally prominent figures in automated follow-up to address issues related to data privacy and confidentiality;
>
> (with Dr. John Grable, President of Brazosport College) made a presentation to the annual conference of the American Association of Community Colleges; and
>
> (with Dr. Jim Reed) made a presentation to the annual conference of the Association of Institutional Researchers.

With recognition of Texas's leadership role in follow-up, national practices are more likely to conform to those we devise. In the long run, exercising that leadership will require fewer changes in Texas's methods if ever the federal government mandates uniform procedures.

Within the state, the System Director, the employer survey subcontractor, and various members of the tri-agency grant management team and the Steering Committee made presentations at:

> mid-summer conference of Secondary Vocational Administrators and Counselors;
>
> TEXSIS data users' group meetings;
>
> LoneStar data users' group meetings;
>
> semi-annual (fall) TAPSOEA conference;
>
> annual conference of the Texas Placement Association;
>
> a student tracking seminar in Richardson, Texas;
>
> JTPA annual planning conference;
>
> mid-winter conference of Secondary Vocational Administrators and Counselors; and
>
> annual conference of the Texas Association of Institutional Researchers.

Lastly, the System Director was frequently called upon to explain the follow-up system and its methodology to:

three meetings of the TCWEC (full council);

Task Force on the State Strategic Plan for Workforce and Economic Competitiveness;

three meetings of the TCWEC Committee on Performance Measures and Evaluation;

at least one meeting per month with TCWEC staff.

The purpose of these briefings was to ensure consistency, cooperation, and integration of tri-agency, practitioner, and TCWEC goals and objectives for the follow-up system under provisions of Senate Bill 642.

Plans for Program Year 1994-95 and Recommendations

Much work remains if the follow-up system is to meet the goal under Senate Bill 642 for statewide integration and comprehensive coverage by the end of Program Year 1996-97. The first requirement will be a permanent source of adequate funding. In Program Year 1994-95, the SOICC enters its third and final year of eligibility for Perkins demonstration and capacity building funds used to date to support the automated follow-up system. A legislative proposal was drafted for the TCWEC suggesting that it take the lead in securing a permanent place in the State's General Revenue Budget for biennial follow-up funding. Auxiliary dollars might be obtained through federal demonstration grants (other than Perkins) and through contributions from the state's workforce development partner agencies.

Breadth of Coverage

Additional funds will be needed in subsequent years:

- to expand JTPA coverage to all titles;
- to move from volunteer pilot coverage to full statewide implementation on behalf of public education (also to include Adult Basic Education and Windham prison schools);
- to include DHS JOBS and Food Stamp Employment and Training participants in follow-up studies;
- to pay for increased data acquisition costs of record matching and the employer survey to handle increases in the number of seed records as new programs are served;

- to pay for increased data acquisition costs as longitudinal services are provided to all constituencies; and

- to pay for increased data acquisition costs of record matching as negotiations are successful in establishing record linkages to additional data bases.

Program Year 1994-95 will, again, be considered a transitional year. The system will focus on activities designed to yield maximum gains in breadth of coverage: on-going negotiations with DHS for expansion of services; negotiations with New Mexico and Oklahoma for data sharing; and supporting activities to increase coverage for students and participants. In particular, as the State Legislature reconvenes in 1995, we will serve as resource persons to the TCWEC and member agencies to provide documentation and backup materials to support legislative proposals calling for informed consent in the use of Social Security numbers for organizing participant information in all workforce development programs.

Recommended Activities Moving Toward a More Mature System

Degree of Automation

Funding estimates for system expansion largely depend upon a decision by the state to move to an enhanced UI wage-record. Until occupationally-specific data are included in employers' quarterly reports, an employer follow-up survey will be required if performance measures are to include calculations of training-relatedness. In discussions with TEC, it does not appear that an enhanced UI wage-record system could be in place before 2001. While the employer follow-up survey will grow more efficient with economies of scale, it can never be as cost-effective as fully automated record linkage techniques for acquiring occupationally-specific outcome information.

As new constituencies are served and as longitudinal data are acquired additional hardware purchase may be necessary – particularly to enhance data processing capacities at the Coordinating Board and TEC. A wide-area network subscription would improve system capacity and the speed of its responses to data requests.

Depth of Coverage

Follow-up in Texas continues as a series of snapshots of successive exiting cohorts. Additional funds will be needed for longitudinal studies. The table on the next page uses services to public education to illustrate how longitudinal studies would progress assuming that funds were made available for statewide implementation before the beginning of Program Year 1995-96.

Scheduling Longitudinal Services for Public Education Contingent Upon Funding

PHASE	Public Ed Pilot	ANTICIPATED STATEWIDE IMPLEMENTATION (Public Ed & all workforce development partners)			
TX SOICC PROGRAM YEAR ==>	1994-95	1995-96	1996-97	1997-98	1998-99
Match runs against higher ed master enrollment files and TEC UI wage records.	1993-94 school year graduating cohort (1st and 2nd round pilots districts)	1994-95 school year graduating cohort for participating entities using SSN as identifier	1995-96 school year graduating cohort for participating entities using SSN as identifier	1996-97 school year graduating cohort for participating entities using SSN as identifier	1997-98 school year graduating cohort for participating entities using SSN as identifier
Match runs against federal civil service, Postal Service, military personnel, & participating out-of-state higher ed and employment records	1992-93 school year graduating cohort (1st round pilots only)	1993-94 school year graduating cohort (1st & 2nd round pilots only)	1994-95 school year graduating cohort for participating entities using SSN as identifier	1995-96 school year graduating cohort for participating entities using SSN as identifier	1996-97 school year graduating cohort for participating entities using SSN as identifier
Inclusion in employer follow-up survey to obtain occupational data and work site zip code	1992-93 school year graduating cohort (1st round pilots only)	1993-94 school year graduating cohort (1st & 2nd round pilots only)	1994-95 school year graduating cohort for participating entities using SSN as identifier	1995-96 school year graduating cohort for participating entities using SSN as identifier	1996-97 school year graduating cohort for participating entities using SSN as identifier
2nd wave longitudinal match run against all data bases (in-state, federal, out-of state, etc.)		1991-92 school year graduating cohort (1st round pilots only)	1992-93 school year graduating cohort (1st round pilots only)	1993-94 school year graduating cohort (1st and 2nd round pilots)	1994-95 school year graduating cohort for participating entities using SSN as identifier
2nd wave longitudinal employer survey (if funded)			1991-92 school year graduating cohort (1st round pilots only)	1992-93 school year graduating cohort (1st round pilots only)	1993-94 school year graduating cohort (1st & 2nd round pilots)
3rd wave longitudinal match run against all data bases (ever increasing contributing agencies)				1991-92 school year graduating cohort (1st round pilots only)	1992-93 school year graduating cohort (1st round pilots only)
3rd wave longitudinal employer survey (if funded) (after this last longitudinal round, seed records destroyed)					1991-92 school year graduating cohort (1st round pilots only)

Tool Development

Validation of the CIP-to-OES crosswalk must be done on an annual basis. The focus in 1994-95 should be on modifying the system to better serve public education's need to determine the training-relatedness of job placements. As the system adds longitudinal data, new time-series analysis tools will be needed. As local workforce development boards are created, their geographic composition must be entered into the Zip code-to-state administrative regions crosswalk.

Utilization

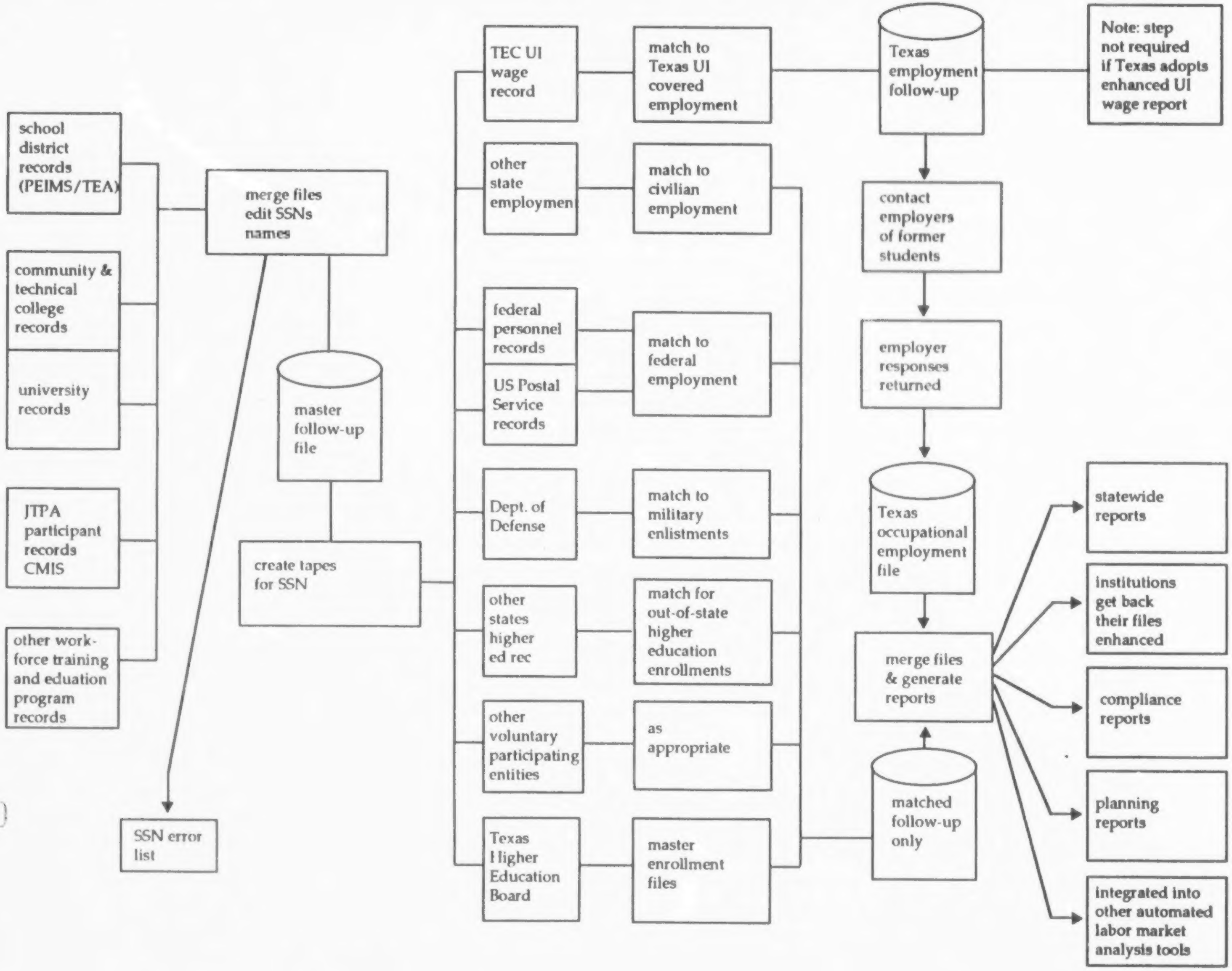
To some extent, wider use of follow-up information will be made as the reports and graphical presentations improve. To that end, the word processing software currently in use should be updated to include more desktop publishing features. To help practitioners and laypersons intuitively grasp complex data, we recommend the purchase of a Geographic Information System – software to map outcomes by county or region. To make graphical presentations more engaging, we recommend the purchase of color printing or plotting hardware.

The chief means of promoting maximum use of follow-up data, however, will remain our communications and outreach efforts. Continued technical assistance will acquaint experienced practitioners with new tools and presentation formats. So, too, will technical assistance bring replacement personnel and new constituencies' researchers up to speed.

Most important are plans to reach out to parental and community based organizations to explain how follow-up works and what benefits they can expect from system expansion. At the same time follow-up staff will be available as resource persons to legislative and administrative leaders. It is through such efforts that the system will take the largest steps in the transition from its narrow use by specialists to widespread acceptance and usage in public policy making.

Finally, work should begin by the end of Program Year 1994-95 to incorporate follow-up findings in SOCRATES (the automated planning model) and Texas CARES (the automated career in-formation delivery system). Results for community and technical colleges will be added first to the GEM and SCHOOLTRAIN modules of SOCRATES. By packaging these data within other SOICC products, we will facilitate wider access and user understanding at critical junctures in both institutional and individual decision-making.

TEXAS COMPREHENSIVE AND INTEGRATED FOLLOW-UP SYSTEM


school district records (PEIMS/TEA)
community & technical college records
university records
JTPA participant records CMIS
other work-force training and eduation program records
merge files edit SSNs names
master follow-up file
create tapes for SSN
SSN error list
TEC UI wage record
other state employmen
federal personnel records
US Postal Service records
Dept. of Defense
other states higher ed rec
other voluntary participating entities
Texas Higher Education Board
match to Texas UI covered employment
match to civilian employment
match to federal employment
match to military enlistments
match for out-of-state higher education enrollments
as appropriate
master enrollment files
Texas employment follow-up
Note: step not required if Texas adopts enhanced UI wage report
contact employers of former students
employer responses returned
Texas occupational employment file
merge files & generate reports
matched follow-up only
statewide reports
institutions get back their files enhanced
compliance reports
planning reports
integrated into other automated labor market analysis tools

APPENDIX II
FILE LAYOUT -- PUBLIC EDUCATION SEED RECORD

Variable	Type	Length	Start	End	Explanation
Record Type	alpha	1	1	1	"H" = high school
District	alpha	6	2	7	District identifier assigned by TEA
Social Security Number	alpha	9	8	17	Unique individual identifier
Gender	alpha	1	18	18	values in PEIMS standards
D.O.B.	alpha	4	19	23	Date of Birth (MMYY format)
Campus	alpha	3	24	26	For multi-campus districts
Voc Ed	alpha	1	29	29	Was student enrolled in a voc ed course during the October recording window?
Graduation Type	alpha	2	30	31	Values in PEIMS standards
LEP	alpha	1	32	32	Limited English Proficiency identifier
Economically Disadvantage	alpha	2	33	34	Perkins special pops identifier
Special Ed.	alpha	1	35	35	Perkins special pops identifier
Bi-Lingual	alpha	1	36	36	Perkins special pops identifier
ESL	alpha	1	37	37	English as Second Language identifier
Immigrant	alpha	1	39	39	Perkins special pops identifier
Pregnant Teen	alpha	1	40	40	Perkins special pops identifier
Grad. Month	alpha	2	42	43	MM format
Grad. Year	alpha	2	44	45	YY format
Ethnicity	alpha	1	46	46	Values in PEIMS standards
Last Name	alpha	8	50	57	Truncated to fit; for SSN validation
Initial	alpha	1	58	58	Middle Initial; for SSN validation
First Name	alpha	2	59	60	Truncated; for SSN validation
School Year	alpha	2	61	62	YY format
Blank fields	blank fill				found in positions 18, 26, 27, 28, 38, 41, 47, 48 and 49 for record sizing

APPENDIX II
FILE LAYOUT - HIGHER EDUCATION SEED RECORD

Variable	Type	Length	Start	End	Explanation
Record Type	numeric	1	1	1	Graduate or leaver
FICE	numeric	6	2	7	Institution identifier
Student ID	numeric	9	8	16	unique Social Security number
Gender	alpha	1	17	17	Gender of student
Classification	numeric	1	18	18	Student level (freshman, etc.)
DOB	numeric	4	19	22	MMYY format
First Time Transfer/In College	alpha	6	23	28	Flags 1st time in college or FICE code of institution where student first enrolled in postsecondary ed. and training
Type of Major	numeric	1	29	29	Academic, Technical, or Tech Prep
Major	numeric	8	30	37	Declared major by CIP code
Sem. Credit Hours (Fall)	numeric	2	38	39	
Sem Credit Hrs. (Spring)	numeric	2	40	41	
Credit Hrs. (Summer I)	numeric	2	42	43	
Credit Hrs. (Summer II)	numeric	2	44	45	
Ethnic Origin	numeric	1	46	46	see CB code values
Last Semester Enrolled	numeric	1	47	47	Fall, Spring, Summer I or Summer II
Last Year Enrolled	numeric	2	48	49	YY format
Type of Award	alpha	8	50	57	Type of degree or certificate awarded upon graduation
Level of Award	numeric	1	58	58	Associate, Certificate, Advanced Skills
Month Graduated	numeric	2	59	60	MM format
Yr. Graduated	numeric	2	61	62	YY format

APPENDIX II

FILE LAYOUT -- JTPA SEED RECORD

Variable	Type	Length	Start	End	Explanation
Record Type	alpha	1	1	1	Include in employer survey (yes/no)
SDA Number	numeric	3	2	4	Assigned by TDoC
Grant	numeric	2	5	6	Under what title did subject participate?
Welfare Recipient	alpha	1	7	7	Yes/No
SSN	numeric	9	8	16	Social Security Number
ID Number	numeric	6	17	22	Assigned by SDA
Sex	alpha	1	23	23	Gender
Ethnicity	numeric	1	24	24	Ethnic group code
DOB	numeric	6	25	30	YYMMDD format
Education Status	numeric	1	31	31	TDoC assigned code for level of education upon entering program
Postsecondary	numeric	1	32	32	Upon entry, was participant attending a postsecondary institution?
Grade at Termination	numeric	2	33	34	Functioning grade level upon program termination
Termination Date	numeric	6	35	40	YYMMDD format
Termination Reason	numeric	2	41	42	Code explaining status at program end
Placement	numeric	5	43	47	Job by OES at time of placement
Last OES training	numeric	5	48	52	OES code of last occupationally specific training intervention by JTPA
Train. Type	numeric	1	53	54	OJT or Classroom
Completed Training	alpha	1	55	56	Yes/No
Fill	numeric	6	57	62	zero fill to standard seed record length

APPENDIX II

FILE LAYOUT -- HIGHER EDUCATION OUTCOMES APPENDED

Variable	Type	Length	Start	End	Explanation
Xfer FICE	alpha	6 bytes	63	68	FICE code for transfer institution
Institution Type	alpha	1 byte	69	69	Transfer to community/techincal college, university or health science center
Xfer Major	alpha	8 bytes	70	77	Major at transfer institution by CIP code
Xfer Type of Major	alpha	1 byte	78	78	Academic, Technical or Tech Prep.
Semester Hours	alpha	2 bytes	79	80	Number of credit hours attempted in the matched term at transfer institution.
Semester/ Year	alpha	3 bytes	81	83	Last two digits of the matched year and semester code (always fall term)

APPENDIX II
FILE LAYOUT -- LABOR MARKET OUTCOMES APPENDED

Variable	Type	Length	Start	End	Explanation
First Name	alpha	1	84	84	For verification of valid match and identification in employer survey
Initial	alpha	1	85	85	ditto
Last Name	alpha	10	86	95	ditto
SIC code	character	4	96	99	Standard Industrial Classification of firm's principle business/industry activity.
Employer ID	alpha	9	100	108	Unique firm identifier used in TEC records to link UI data base to contact information data base
Firm Name	alpha	35	109	143	First line of company name
Company Name (2)	alpha	35	144	178	Second line of company name (if necessary)
DBA	alpha	35	179	213	Doing Business As (company name) as backup contact information.
Address (line 1)	alpha	35	214	248	Contact information for distributing employer follow-up survey.
Line 2	alpha	35	249	283	ditto
City	alpha	20	284	303	ditto
blank		1	304	304	
State	alpha	2	305	306	ditto
blank		2	307	308	
Zip + 4	alpha	10	309	318	ditto
Wages	alpha	5	319	323	Whole $ for matched quarter
Wages	alpha	2	324	325	Remaining cents
Quarter	alpha	3	326	328	Year/quarter match was found

APPENDIX II

FILE LAYOUT -- EMPLOYER SURVEY RESULTS APPENDED

Variable	Type	Length	Start	End	Explanation
Response	alpha	1	351	351	Did the employer respond to the survey? (yes/no)
Job Title	alpha	25	352	376	Employer-supplied occupational title (verbatim).
OES Code	alpha	5	377	381	OES code assigned to the title by the subcontractor.
Degree of Training-Relatedness	alpha	1	382	382	Results of applying the CIP-to-OES crosswalk to data files: Directly related, closely related, entry-level/career ladder, generally related or not related.
Zip Code	alpha	5	383	387	Worksite (supplied by employer)
City	alpha	20	388	407	Worksite (converted by subcontractor from employer supplied Zip code)
State	alpha	2	408	409	ditto
County	alpha	3	410	412	FIPS/County code (supplied by subcontractor conversion of employer supplied Zip code)
Full time/ full quar-ter flag	alpha	1	413	413	Did the former student/partici-pant employer work at least 35 hours per week for the full quarter for which earnings data are available?

APPENDIX III
SAMPLE DATA SHARING AGREEMENT

Texas Higher Education Coordinating Board
Request for Access
Confidential Student Information

CLIENT/CONTRACTOR AGREEMENT

Requestor Name ____________________ Address ______________
Title ______________ ______________
Telephone ____________________ ______________
Division/Co ____________________ ______________

I am requesting access to individual student information for the following reasons:
Justification: The Texas SOICC has been selected as the automated follow-up grant recipient to collect outcomes data on former students and participants of workforce development programs in public education, higher education and the JTPA system. The study will benefit students by improving program planning, evaluation and coordination.

Please attach a copy of specific plans developed for using the requested information, as well as a copy of procedures for protecting confidentiality.

I understand that information concerning any individual student is to be held in strictest confidence and I assure that procedures are in place for monitoring and protecting confidentiality of student information.

I understand that any unauthorized disclosure of confidential student information is illegal as provided in the Family Educational Rights and Privacy Act of 1974 (FERPA) and in the implementing federal regulations found in 34 CFR Part 99. FERPA is specifically incorporated into the Texas Open Records Act as an exception to records which are subject to disclosures to the public (Art. 6252-17a, Sec.14(e) Vernon's Annotated Code).

In addition, I understand that any data sets or output reports I, or my representative, may generate with individual student data are confidential. I will not disclose to any unauthorized person any data set or reports which I am given or devise. I understand that I am responsible for any computer transactions performed as a result of access authorized by use of password(s).

I also understand that failure to observe these restrictions constitutes a "Breach of Computer Security" as defined in Texas Penal Code, Chapter 33 sec. 33.02,B, and that such an offense constitutes a Class A misdemeanor.

______________ ______
Signature of Requestor Date

APPROVED BY: ______________________________ ______
General Counsel Date

APPROVED BY: ______________________________ ______
Assistant Commissioner for Administration Date

APPENDIX IV

STEP BY STEP GUIDE FOR USING AUTOMATED FOLLOW-UP DATA IN A PROCESS OF CONTINUOUS PROGRAM IMPROVEMENT

Overview

To date, performance standards are composite reflections of overall program effectiveness. That is, they are expressed as a single minimum level of expected outcomes that can be achieved through success on a variety of performance measures. For example, under Coordinating Board rules, a program is considered successful if 85% or more of its former students are placed in the labor market, continue to pursue education and training elsewhere, and/or join the military. The three hypothetical programs below would be considered equally successful though each met the 85% standard via drastically different combinations of outcomes:

	PROGRAM A	PROGRAM B	PROGRAM C
Working only	20%	40%	15%
Pursuing education only	40%	15%	30%
Enter the military only	1%	1%	22%
Combination of the above	27%	32%	21%
Documented Successes	88%	88%	88%

The illustrations used herein assume that an initial examination of follow-up data for a program indicated its performance fell below the composite standard. While the illustrations below use the Coordinating Board's "*85% Successful Outcomes Rule,*" the diagnostic procedures are applicable no matter what mix of performance measures are available to the education and training provider in documenting the effectiveness of a program as a whole. So, too, is the diagnostic process applicable no matter what level of composite success is set as the standard.

The data obtained from automated follow-up provides some but not all of the information necessary for administrators and service providers seeking to improve the curriculum and its delivery. Follow-up data are like indicators and a compass on an automobile's dashboard. They tell you how fast you are going and what direction you are headed. They may even provide early warning signals about problems. Standing alone, they do not explain why a problem exists nor what corrective action, if any, is necessary and appropriate. These data, however, suggest where to look next in a logical process of elimination as practitioners attempt to pinpoint problem(s) and recommend solutions.

STEP ONE - Review the Formula and Figures Used in Calculating Successful Outcomes

The Texas SOICC and participating agencies will make preliminary calculations of successful outcomes. The calculation by program is simple:

unduplicated count of successful outcomes / total useable records of completers and leavers

The gross calculation is not without criticism. In part, it holds education and training providers accountable for factors beyond their control. Practitioners on the Follow-Up Steering Committee have suggested two principle considerations to be entertained in recalculating success rates. By using one or both in recomputations, the education and training provider may be able to demonstrate satisfactory performance. Either factor increases the likelihood of a higher successful outcome ratio by reducing the denominator.

Are some program completers unavailable for activities counted as successful outcomes? Obviously, deceased persons should be taken out of the calculation. Not so obvious would be incarcerated persons. For example, if vocational training is offered as rehabilitation in a correctional facility, students/participants might complete a program before becoming eligible for release. Such individuals should be followed. For follow-up purposes, however, they should be included in the cohort based upon release date rather than program completion.

The initial calculation does not take into account student intent. It assumes that the outcomes desired by taxpayers, administrators, service providers, prospective employers and the vast majority of students/participants are shared by all who enroll in a program. Programs, however, may attract persons fulfilling avocational and self-development interests. This may be especially true for those enrolled in adult vocational courses; however, some declared majors may have no intention of pursuing what others would define as desired outcomes. One could argue that such persons also be removed from the denominator.

STEP TWO - Consider Collecting Supplemental Follow-Up Information

The Automated Student and Adult Learner Follow-Up System matches seed records to a finite set of administrative data bases. Taken collectively, those data bases do not exhaust all possible successful outcomes. Great care is taken in reports to acknowledge the limitations and gaps in available data sources. Missing documentation of success(es) in a former student's record is not labeled as "*unsuccessful*;" rather, all such cases are reported as "*not located*." If a program falls below the performance standard, administrators should first determine if supplemental follow-up is warranted.

Several factors should be taken into account when deciding to conduct supplemental follow-up. First, is there reason to expect that a disproportionate number of the program's successes fall within the gap(s) in the data bases linked by the automated system? The chief gaps in the follow-up system's coverage do not effect all programs uniformly.

> The Texas Unemployment Compensation Act does not cover self-employed entrepreneurs. Some programs train persons for occupations where the opportunity structure is skewed toward self-employment. Many cosmetologists, real estate agents, and musicians, for example, are not included in TEC's wage record system. Exemption from the Unemployment Compensation Act for some farm workers has similar effects on follow-up for agricultural programs.
>
> Students from institutions on the perimeter of Texas may find jobs or continue their education in an adjacent state. Until data sharing agreements with surrounding states are negotiated, the automated system can not document those successes.
>
> Unpaid volunteer work is not covered by the Unemployment Compensation Act. Paramedics and emergency medical specialists, for example, may be using training received even though their volunteer work can not be documented by the automated follow-up system.
>
> Opportunities in some fields for advanced training and education as the logical continuation of lower level programs offered at Texas's public institutions might be available only in out-of-state or at private institutions not yet linked to the automated follow-up system.

In each case, the probability of discovering additional outcomes may be high. In deciding to conduct supplemental research, weigh your estimate of the likelihood of additional hits against the availability of resources for the data collection effort and your confidence in the accuracy of contact information in alumnae files.

If supplemental research uncovers additional successful outcomes for those not located by the automated system, the new data should be reported to the Texas SOICC in standardized format (to be set in collaboration with the agencies) by the deadline (to be announced annually) with sufficient backup documentation for audit and verification. After the submission deadline passes, the SOICC will calculate the revised "*successful outcomes*" score for use in all official reports.

STEP THREE - Disaggregate Available Follow-Up Data by Type of Outcome

Assume that either supplemental follow-up was not conducted or that the additional documented successes did not suffice to move performance above the standard. The next step is to disaggregate the data *by type of outcome.* Separate successful outcome rates for continued pursuit of education and training, job placements, and entered the military will be available. Failure to meet a composite performance standard may be attributed largely to poor performance in one but not all of the successful outcomes categories.

At present, standards are not published separately for each type of successful outcome. The sequence in which the components of success should be examined can be prioritized according to the training provider's educated guesses about what may have caused the shortfall and/or where corrective action is most likely to be fruitful. In the absence of disaggregated external standards, it is the task of the education and training provider to determine what mix of outcomes should have contributed to the composite success of its programs. The anticipated mix may be discerned from a mission statement or from the historical records surrounding creation and initial implementation of each program. When the program was created, who collaborated on curriculum development: military specialists? business and industry (e.g., through the DACUM process)? admissions or training-providers from institutions offering articulated programs? What was the program primarily designed to achieve: preparation for military service? imparting competencies for the workplace? laying the foundation for additional education and training? Actual outcomes must be compared to self-imposed or hypothesized expectations to determine more precisely where (the) problem(s) occurred.

In some cases, self-imposed performance standards (or expectations) may be available. Did the training provider set program performance standards during a self-study for an accreditation visit? Were targets set in corrective action plans submitted in prior years for the improvement of subpar programs? Were performance levels promised or implied when applying for program funding or in recruiting students/participants?

In other cases, self-imposed performance standards must be inferred from other materials:

- How do outcomes for the program's most recent cohort compare with prior cohorts? Has there been a significant downturn in the proportion of successful outcomes on one of the component measures? Is the downturn more noticeable on one component than in the others? Has any downturn accelerated? (Have successes in one aspect remained constant or failed to accelerate as improvements have been made on other component measures?)

- What did the students expect when they entered a program? What can be distilled about implied program expectations from guidance materials, counseling notes or, preferably, local empirical information about student intent?

- How are comparable programs performing elsewhere? In particular, if the program under examination emulates another, how is the emulated program performing on each component measure? If rooted only in theory, what does the related body of literature suggest about expected outcomes?

STEP FOUR - Analyze Externalities

Externalities must me analyzed to determine if expectations on each component measure were realistic. The list below is suggestive and is not intended to be exhaustive.

Entering the Military as an Outcome

Is there a decreased need for personnel in the armed services? Has the military in general decreased its recruitment efforts and/or made entrance requirements more stringent? Have bases near campus closed or downsized? Have any or all of the branches suspended or decreased their recruitment efforts on or near campus? Has military service become less attractive because increases in compensation and benefits have not kept pace with those for civilian jobs? Has military service become less attractive because changes in international affairs and American foreign policy have increased the perceived risks? Has there been a decline in the need for personnel in those specific military subspecialties for which the training program was designed? Have the required competencies changed in the military subspecialties the program was designed to address?

Follow-up data, per se, can not answer these questions but should suggest when it is appropriate to ask them. Local recruiting officers and defense conversion/transition specialists should be consulted. Their answers will suggest appropriate remedies for programs designed chiefly as preparation for military service.

> If no factors can explain lower than expected military enlistments, the activity most likely to improve results would be facilitating increased recruitment on campus and/or increased communications between the institution's placement office/counselors and military recruiters.
>
> If the competencies required in the military subspecialties addressed have changed, military specialists should be consulted in updating the curriculum or revising it to emphasize emerging and shifting military subspecialty personnel needs.
>
> If changes simply indicate declining opportunities for military enlistment:
>
>> shift the curriculum to a civilian employment emphasis in conjunction with defense conversion and transition plans;

emphasize academic and technical components which are most likely to articulate with more advanced training and education available elsewhere; or

as a last resort, suspend or terminate the program.

Continued Pursuit of Education and Training as an Outcome

Have job opportunities for persons with more advanced awards decreased (thus making the pursuit of additional education and training less attractive)? Has renumeration for advanced awards decreased in absolute or relative terms? Labor market data and forecasts are available from Quality Work Force Planning Committees, the Texas SOICC, the Texas Employment Commission, Bureau of Labor Statistics, as well as labor, economics and educational journals. If they indicate more advanced degrees cease to provide employability advantages in a training-related field, the curriculum might be revised to emphasize the skills and competencies needed for labor market entry immediately upon program completion.

If continued pursuit of education does provide employability advantages, other questions should be asked. Within the region or state, do opportunities exist outside the institution for additional training and education related to the program being examined? Are articulation agreements in place with all other institutions offering opportunities for continued education and training in related fields? How recently were the articulation agreements negotiated or revised? Are incentives in the articulation agreements sufficiently strong to encourage program completers to seek additional education and training at the cooperating institution? Do student perceptions of duplicative course requirements at the cooperating institution discourage them from continuing? How are comparable programs doing elsewhere?

Assuming that sound, inviting articulation agreements are in place, are program participants aware of the opportunities at the cooperating institution? Is articulation information available and distributed in hardcopy? in automated form? readily available in the library, counseling office and/or student center? Do program directors, instructors and guidance counselors inform students about articulation opportunities and assist them in seeking admissions at the cooperating institution with credit for coursework already completed? Are representatives of the cooperating institution active on campus recruiting program completers to continue their education and training?

Apart from formal articulation agreements, does the program adequately prepare its students/participants to succeed at the next level? Do ACT/SAT scores indicate a larger than anticipated number of program completers were not fully prepared for admission to selective institutions of higher education? Does the required remediation (as a result of low TASP scores) discourage a program's graduates from continuing their education and training at public institutions of higher education with open admissions policies? Do "*electronic transcript*" comparisons indicate that a program inadequately prepared its students for more advanced education and training offered elsewhere? Are a program's students dissuaded from seeking admission to institutions where preceding cohorts have not performed well? Are the costs of pursuing additional education and training beyond the means and resources of your former students? Are subgroups under financial or family pressures to enter the labor market quickly?

Again, suspension or termination of a program because of low transfer rates would be a last resort. Preferable solutions would be to increase and improve articulation agreements, increase dissemination of articulation information, facilitate transfer institution recruitment and assist students with their applications for transfer. Where necessary, the curriculum could be revised to emphasize training for immediate entry into the labor market or preparation for related emerging disciplines. Lastly, the curriculum could be changed in consultation with representatives from the next level of education and training to ensure the competencies imparted by a program prepare its graduates to meet admissions requirements and to succeed at the transfer institution.

Labor Market Outcomes

Several factors could explain a program's lower than expected job placement rate. Chief among those factors would be decline in occupational employment opportunities related to training – that is, anticipated job openings did not exist. Demand occupation forecasts are available in the form of the State List of Priority Occupations, Regional Quality Work Force Plans, JTPA Service Delivery Area Plans, and supporting documentation supplied to the Coordinating Board to justify funding of new programs. When proper procedures are followed, these demand forecasts and occupational targeting strategies are data-driven and conscientiously validated through collective regional wisdom and the checks and balances of educator and employer interests. When the model is followed conscientiously, programs delivering training and education related to the targeted occupations should result in high placement rates and long term retention. *In particular, wages at entered employment and the rate of training-related placements should be high.*

Low placement rates could indicate several possibilities. Were the data-driven predictions of the planning model ignored? Were some programs insulated from the process because their providers and supporters were entrenched behind outdated demand information, position and political clout, or non-representative anecdotal information? Was student interest in a program misinterpreted or misrepresented as an indicator of employers' demands for skilled workers in a related occupation? Did local business and industry representatives exaggerate occupational employment demand to ensure an oversupply that would depress wage demands? Was the planning model ignored or manipulated to preserve some programs in the face of declining or virtually non-existent occupational employment demand? If so, low placements validate the soundness of the planning model and should persuade planners and administrators or business and industry to refrain from ignoring or manipulating the process.

A second possibility is that, while modest demand existed, several education and training-providers independently used the demand figures to justify their program offerings. ***In the absence of coordination*** among providers of similarly targeted programs, the *collective* ***supply*** exceeded demand. Closely related is the possibility that while modest demand forecasts justified limited enrollments, demand information was not translated into enrollment ceilings and cautious career advising. That is, more students/participants were recruited and graduated than could be absorbed given the ***level*** of demand forecasted.

The planning model, even when validated with regional wisdom, is not infallible. The model relies on interpolation from historic data and is not a crystal ball. In some cases, unforeseen or unprecedented events will result in lower than expected job openings. Such events, however, can themselves be documented and analyzed. Their impact will be evidenced in the next wave of industrial and occupational employment data (and, once the system is fully implemented, in the follow-up data) used in the planning model. Where earlier occupational demand forecasts from the model were too high, the decision to maintain, suspend or terminate a related program can be guided by:

rerunning the planning model using the most recent data; and

exercising regional wisdom and locally available empirical data to determine if the lower than expected demand for occupational employment was a temporary aberration or an indication of a long-term downward trend.

The other distinct possibility is that the forecasted job openings ***did*** exist but the positions were not filled by graduates from the related training program. The TEC job bank, local personnel agencies and the classified adds can be analyzed for additional evidence that the forecasted job openings existed. Local prospective employers can be consulted to determine why the positions were not filled by program graduates. In determining the latter, there are, again, several possibilities to cover. Each possibility may suggest a slightly different remedy.

If the program's graduates applied for but were not hired for open positions, was it because the prospective employers found them lacking requisite competencies? If this is true then the service provider should ask prospective employers to collaborate in reviewing the curriculum and related competency assessment techniques. How recently was the curriculum last reviewed by a focus group (e.g., DACUM process)? Have the employers' expected competencies changed since they were last given a chance to help shape the curriculum? Was business and industry adequately represented on the last focus group? Were the firms most likely to hire invited to send representatives? Did business and industry send representatives with the appropriate expertise? Were the business and industry representatives aggressive in providing input? Were business and industry suggestions ignored in favor of educator opinions or resistance to changing traditional practices? Were authentic assessment instruments developed to measure the expected competencies? Was program completion tied to demonstrated competence to the level of employer satisfaction? Did a disproportionate number of graduates fail to take or pass qualifying examinations for admission into the licensed and regulated professions?

If, after consulting business and industry, it appears that the curriculum and assessment practices were acceptable, review institutional records to determine if students/participants exited too early. For example, the full range of competencies necessary for employment may be reflected in the standards for awarding an associate degree while the less demanding criterion for a certificate award was too low to confer employability advantage. If that is the case, the training provider should look beyond the curriculum to other aspects. Were students adequately counseled and motivated to persist through to the more advanced award? Were students accorded the support necessary to help them persist? Here the remedy may have less to do with curriculum revision than the redeployment of resources into student retention and persistence efforts.

If the competencies and assessment practices of the training provider square with employer expectations and if students/participants persisted to receive the appropriate credentials and still did not fill existing openings, additional possibilities should be examined:

> Were the training-provider's job placement activities sufficient? Did the placement office stay in communication with prospective employers? Were job notices posted with the placement office? Were students aware of and take advantage of placement services? What was the ratio of students to placement officers?
>
> If students were aware of and adequately trained for announced job openings, did the structure of employment pose additional barriers? Were students provided adequate information about the entry level wages they could expect if they completed a program? Were students too discouraged to apply because jobs were posted at lower than expected wages? Were employer practices constrained by ethnic, gender or special populations considerations (either in the form of historic discrimination or affirmative action mandates) that worked to the disadvantage of the program graduate mix?
>
> If program graduates applied for available positions, were they passed over in favor of applicants trained elsewhere? In the opinion of the prospective employers, does a competing training-provider do a better job of preparing students/participants for the workplace? In what competencies were the competing training-provider's graduates better prepared? What can the program do to meet or exceed its competition? Has a prospective employer been "*soured*" on a program because of dissatisfaction with an individual graduate from an earlier cohort? Would the dissatisfied employer's interest in a program's graduates be restored if the unsatisfactory individual was retrained under the provisions of a graduate guarantee? If all future graduates were guaranteed to be competent?

STEP FIVE - Disaggregate the Follow-Up Data by Type of Student Served

While the mission of most publicly funded programs generally is to serve all who need and desire education and training, we recognize that not all students learn at the same pace or in the same manner. While a sound curriculum may be externally validated, its delivery must be tailored to the needs and learning styles of individuals. When a program fails to meet a composite standard for successful outcomes, the shortcomings may be more in evidence for subpopulations in the student mix.

Contained either in the seed records or local data bases are background and demographic variables which could be used in disaggregating and explaining outcomes. The following items are generally flagged in each record: gender, age (or date of birth), ethnicity, economically disadvantaged, English as Second Language, limited English proficiency, migrant, single/teenaged parent or displaced homemaker, special education or other factors that may suggest barriers to persistence, the need for tailored delivery or special counseling and support services. The seed records with appended outcome data also can be linked back to local data bases which may contain more detailed information on a student/participant's financial situation, intent, grade point average, pre-admission standardized test scores, and aptitude or interest profile.

Where a program is generally successful in serving the majority of those enrolled but fails to serve all subgroups equally well, overall success may be achieved by concentrating on tailoring delivery to special needs:

adjust the pace of curriculum delivery;

offer additional tutorial and mentoring services; and/or

use or develop instructional materials more likely to engage the interest or fit the learning style of the identified subpopulation.

STEP SIX - Review Follow-Up Data for Other Education and Training-Providers

In all the recommendations above, the emphasis is on turning to outside sources for more information to better pinpoint problems and their causes. Assume the education and training provider and those consulted agree that an existing problem is not so insurmountable to warrant program suspension or termination. While those consulted outside the education and training system may help in understanding the nature of the problem, they may lack the expertise or experience to provide constructive suggestions for program improvement. The search for solutions, however, can be guided by follow-up data from other programs.

In addition to identifying problems, the follow-up system can help identify best practices potentially worthy of emulation. For any given problem, there probably is no shortage of theories or marketing hyperbole touting one solution over others. Hard data, however, can help identify programs or practices that work. The training-provider that examines only its own program performance overlooks a rich source of information that could be used in developing concrete action plans for improvement.

Here a note of caution should be inserted. While follow-up data can indicate what programs achieved better results, the education and training provider should not assume automatically that "*best practices*" used elsewhere will work under all circumstances. When reviewing follow-up data from other service providers, ask the following questions:

Did the program that achieved superior results have more resources at its disposal?

Did the program that achieved superior results operate under more favorable circumstances? Was the labor market served more robust (growing or at least insulated from comparable downturns)? In the immediate vicinity were there more opportunities for continued pursuit of education or military service?

Did the program that achieved superior results serve a different population mix? Were program admissions more selective? Were program participants less likely to need remediation (based, for example, on in-coming standardized test scores)? Did the program serve a smaller percentage of persons in special populations (harder to serve/at-risk) categories? Did the program serve a smaller percentage of persons likely to face gender, ethnic, or age discrimination in the marketplace.

In developing concrete action plans for program improvement, education and training-providers should look to more successful programs offered under comparable circumstances to a comparable student mix. (See STEP FIVE, supra.)

STEP SEVEN - Continuous Review

The illustrations above assume that a program failed to achieve a composite performance standard. All programs, however, need to be kept current and engaging. Professionalism among educators and trainers welcomes feedback on performance. Beyond meeting minimal standards developed by others, they compare their current performance to what their previous cohorts of students/participants achieved and to their self-imposed standards of excellence. While they may not be required to submit corrective action plans, they will constantly review their own role in curriculum development, instructional materials selection, delivery methods, assessment and grading practices. Follow-up data should be widely shared and frequently discussed not only by program planners and administrators but also by division and department directors with the instructional staff, counselors, and placement officers as part of a total quality management approach to serving customers. Follow-up data can provide early warning signals of declining (albeit technically acceptable) performance and point to better practices worthy of emulation.

Conscientious professionals impose more than the minimal standards upon themselves. This is particularly true with respect to labor market outcomes. Current standards count all jobs alike when calculating successful outcomes. While standards have not yet been set officially, more stringent definitions of "*success*" are being proposed in agency and statewide strategic plans.

Among the more stringent measures are:

- Job Placement

  Under current practices, a job held after program completion/termination is counted as a success even if the job was held prior to or during program enrollment. Pre-completion/termination and post-completion/termination comparisons could operationally define "*placements*" in a way that more appropriately attributes successful labor market outcomes to education and training programs.

- Job Quality

  Under current practices, part-time, low wage, temporary and "*dead end*" jobs count alike in calculations of successful outcomes. More stringent standards would include:

  - job retention among incumbent workers who sought training to update their skills in the face of changing occupational employment demands and long term job retention among all students seeking employment security;
  - wage at entered employment, full time status and benefits coverage can be used to operationally define "*quality employment*"; and
  - pre/post training wage gains among incumbent workers, and long term wage gains and/or career advancement (over several longitudinal waves) among all former students/participants.

- Training-Related Placements

  Under current practices, jobs unrelated to training count the same in calculations of successful outcomes as do training-related placements. The purpose of the planning and budgeting process as well as of guidance systems, however, is to wisely channel both public funds and individual resources into preparation for quality employment. They target occupations, fund related programs accordingly and help students/participants make sound career decisions in the expectation that training-related placements will meet other quality indicators listed above.

The SOICC will collect additional data in anticipation of revised standards as conceptual definitions are operationalized and revised standards are phased in. Professional educators and trainers, in good faith and in the spirit of professionalism, will "*get ahead of the curve*" to evaluate their programs on these more rigorous measures ***before*** minimal standards are announced. They will do so because they perceive the intrinsic value represented by those measures and in their extrinsic value as indicators of service to their customers: students/participants, taxpayers, economic developers, and prospective employers alike.

APPENDIX V

USING FOLLOW-UP DATA IN PLANNING QUALITY SERVICES

The JTPA Model

Where occupational skills training is provided, JTPA planning rules require they be targeted to demand occupations which meet quality criteria set by the area's Private Industry Council. Title IIA and Title III plans are submitted to TDoC for approval. In reviewing plans, the TDoC's state labor market analyst compares submissions to planning guidelines and to data-driven forecasts generated by SOCRATES, the automated planning model. Some latitude is allowed for infusion of local wisdom. In some cases, that latitude is stretched. The state labor market analyst may recommend deletion of questionable or unsupported occupations on preliminary lists. In some cases, the labor market specialist advice is ignored or over-ridden. In other cases, participants are granted special exemption to enroll for occupational skills training in fields outside the target list.

Follow-up data should be used to validate the planning model. SDA administrators are advised, before submitting each year's plan, to review their prior year's performance in light of their occupational targeting decisions. If the planning model and the state labor market analyst's recommendations are sound, then one would hypothesize the following:

Participants received training related to:	Predicted Rate of Successful Labor Market Outcomes
Targeted occupations approved by LMI specialist	Very high (at or above performance standards or high enough to earn incentives)
Occupations recommended for deletion from list by LMI Specialist	Questionable
Occupations not on target list	Low

Where higher than expected success rates are achieved by those trained for occupations recommended for deletion by the state LMI specialist, the Private Industry Council should review the minutes of its meeting where the specialist's recommendations were rejected. The PIC should articulate its reasoning and forward information about exceptional outcomes to TDoC for possible revision of planning guidelines. The same should be done by case managers where special exemptions were granted for training outside the target occupation list resulted in exceptional outcomes.

If, however, results are as hypothesized, the PICs should use the information to curb unwarranted deviation from the planning model. SDA administrators also can use the information to eliminate most special exemptions for training outside the target list.

Quality Work Force Planning

The planning model that evolved in the JTPA system was automated by the SOICC through the SOCRATES project and adapted for use by Quality Work Force Planning committees. While the QWFP committees have a broader mission than JTPA SDAs, the logical planning sequence is the same. QWFP committees infuse SOCRATES with regional wisdom when developing regional target occupation lists and identifying a small subset of critical occupations. As in PIC planning of JTPA services, there are the potential abuses and misuses in QWFP planning. Part of the annual cycle should include the review of follow-up data (as above) to validate the logic used when substituting regional wisdom for data-driven forecasts.

In particular QWFP committee members should direct the regional LMI operator to prepare an annual report comparing placement rates, training-related placement rates, average quarterly earnings, and the rate at which former students exit the region to find employment or to enroll in an institution of higher education. The report should compare outcomes for each of the region's programs related to target occupations with:

a) the composite success rate for all education and training programs offered in the region;

and

b) SOICC-supplied information on statewide outcomes.

Public Education

The planning model also is used to generate TEA staff recommendations to the State Board of Education for the State List of Priority Occupations. Board members are free to substitute their own logic and to persuade fellow members to add occupations to the list. We recommend that TEA staff prepare an annual report as part of the State List of Priority Occupations selection process. The report should compare success rates for programs related to the prior year's list with overall statewide success rates. In particular, success rates of data-driven occupations on the State Priority List should be compared to those moved independently for adoption by one or more Board members.

Higher Education

Before adding new programs, institutions of higher education are required by the Coordinating Board to submit evidence that their current programs meet success rate standards. Follow-up data are used to document success rates. Extensive use is made by the Coordinating Board when evaluating institutional effectiveness and in conducting site-evaluations. Technical assistance may be required as new features are added to automated follow-up or as turn-over occurs in the institutional research offices.

A Self-Correcting Planning Model

The automated planning model, SOCRATES, is based on economic theory and sound forecasting practices. Nonetheless, it relies on trend data and the application of current structures. Where technology or changes in labor inputs affect an industry, SOCRATES may not reflect those most recent impacts. Recommended weights, based on *post facto* regression validation techniques, are assigned to each variable used in the formulas for predicting future events. Forecasts always involve an "*error term*" or a "*confidence interval*." That is, false precision in forecasting is avoided by expressing projections in terms of an expected range. Models are continuously revised in order to reduce the error term or narrowing the range within which outcomes are expected to fall. Models are revised by adding (or deleting) variables based on empirical evidence of their explanatory powers and/or by reassigning weights to existing variables as more is known about their interactive effects.

The SOCRATES planning model is designed to determine the appropriate balance between the demand for and the supply of skilled workers for occupational employment. Heretofore, the model has been based primarily on demand information. Follow-up adds important supply-side information useful in making corrections to the model. The graphic on page 102 depicts how follow-up information will be added to SOCRATES to reduce the error term and improve the confidence users have in its forecasts.

Geographic Evaluation Model

The Geographic Evaluation Model provides a standard narrative format is fleshed out with empirical data for any configuration of counties selected by the operator. These narratives give planners a thumbnail sketch of the region configured. Competency levels among a region's labor force are a critical consideration in economic development and planning. Heretofore, education and training information in the narratives has been derived from census data that may be severely dated before they are released officially. Follow-up data on the most recent cohort of program completers can be added to GEM narrative reports on an annual basis to provide a better picture on the supply side of the employment equation.

The Industry Evaluation Model

The Industry Evalutation model forecasts growth in occupational employment by industry sector. It is based on current demand and historic trands information. Previously available data did not differentiate between the demand for experienced workers and new labor market entrants. Because the automated follow-up system collects employment information from the UI wage records by industrial code for the prior year's program completers, it may be possible to better forecast the demand for new labor market entrants.

The Staffing Pattern/Matrix Statistical System

The Matrix Statistical System breaks industry employment growth projections into occupational staffing patterns. It forecasts occupational employment demand by allocating base year industry employment projections developed by TEC using the annual Occupational Employment Survey. Heretofore, occupational employment projections have been based on statewide data derived from employers' survey responses. Like the INDEVAL model, MATSTATS currently does not differentiate between the demand for senior workers from demand for new labor market entrants for each occupation. Since the employer survey collects worksite information for the most recent cohort of program completers, forecast can be tailored to regional employment conditions and practices.

OEM/CIDS

The Occupational Employment Model/Career Information Delivery Model provides detailed information about the conditions of employment for each OES coded occupation. Heretofore, it has been based on statewide labor force data which includes both senior incumbent workers and new hires. Follow-up information will give program participants sufficient information to form reasonable outcome expectations for themselves based on regionalized data for their peers who exited the education and training pipeline most recently.

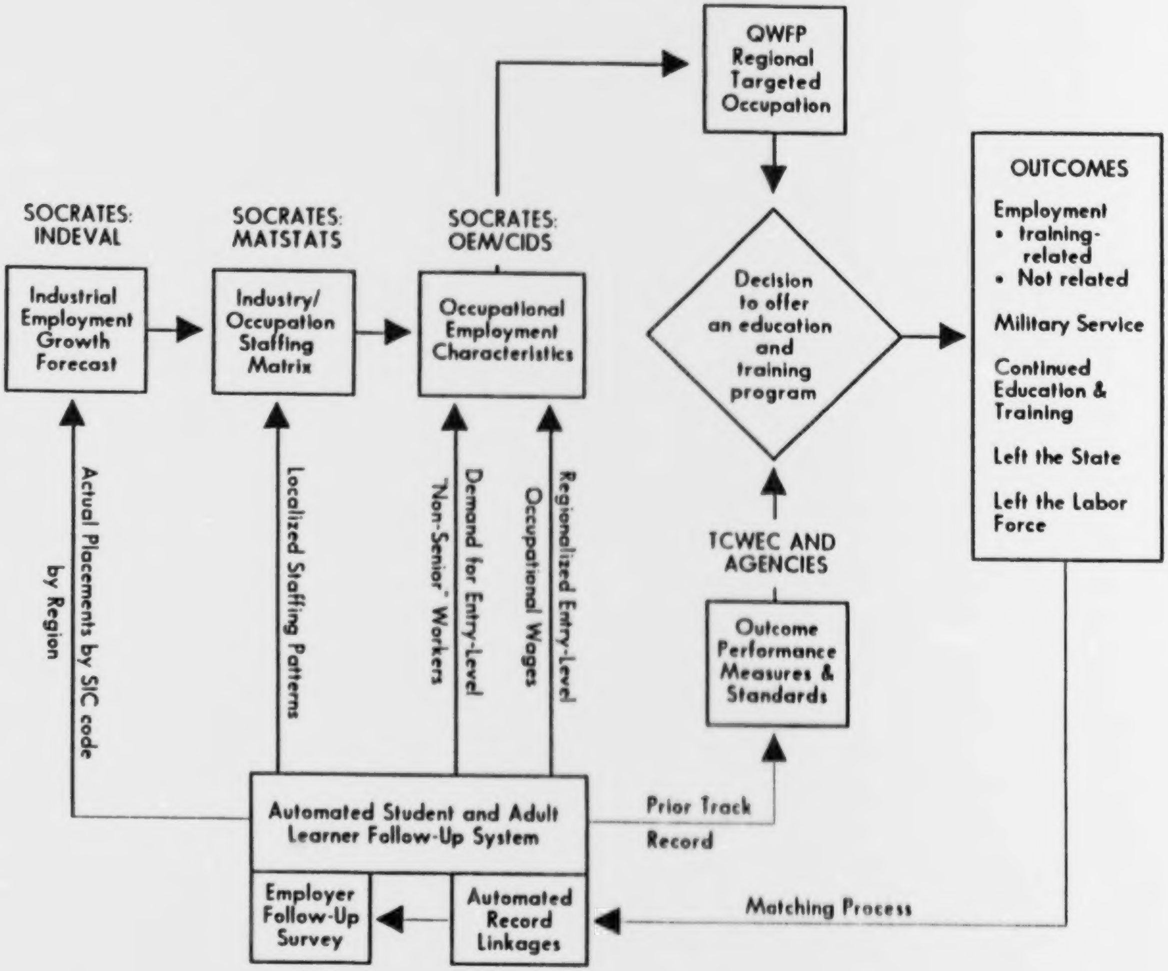
CROSSWALK

The Crosswalk includes a matrix for determining the relatedness of job placements (by OES code) to training received (by CIP code). The follow-up system, by devising a process for continuous validation, has contributed significantly to the usefulness and acceptance of the CIP-to-OES crosswalk. Other crosswalks may be enhanced or added as the result of follow-up activities: Military-to-Civilian Job Titles, Private Sector-to-Federal Job Titles, TEA-to-CIP codes, Zip-to-Operator Configured Regions.

SCHOOLTRAIN

The **SCHOOL**s and **TRAIN**ing module currently lists only the availability of programs by institution. Follow-up activities can add information about the track record of each program: persistence and graduation rates, job placements, training-related placements, average entered employment quarterly earnings, geographic mobility in job search, and continued pursuit of education and training. These additional variables provide a better basis for participant career decision-making, training provider and program selection.

SELF-CORRECTING MODEL FOR PROGRAM PLANNING AND EVALUATION AUTOMATED FOLLOW-UP AS FEEDBACK MECHANISM FOR SOCRATES


QWFP Regional Targeted Occupation
SOCRATES: INDEVAL
Industrial Employment Growth Forecast
SOCRATES: MATSTATS
Industry/ Occupation Staffing Matrix
SOCRATES: OEM/CIDS
Occupational Employment Characteristics
Decision to offer an education and training program
OUTCOMES
Employment
• training-related
• Not related
Military Service
Continued Education & Training
Left the State
Left the Labor Force
Actual Placements by SIC code by Region
Localized Staffing Patterns
Demand for Entry-Level "Non-Senior" Workers
Regionalized Entry-Level Occupational Wages
TCWEC AND AGENCIES
Outcome Performance Measures & Standards
Automated Student and Adult Learner Follow-Up System
Prior Track Record
Employer Follow-Up Survey
Automated Record Linkages
Matching Process

The Proposal Process

The Request For Proposal (RFP) process is used by JTPA SDAs, school districts and institutions of higher education in awarding contracts and grants, at various stages in curriculum development, and in the selection of instructional materials. Careful selection of service providers, grant recipients, subcontractors and vendors should result in improved performance. Where more than one proposal *for participant interventions* is received in a competitive process, it may be difficult to determine which proposal best meets the need unless the RFP is carefully written. Responses may be clouded with unsubstantiated claims of effectiveness, marketing hyperbole (such as claims to be "an exemplary program"), and/or unrepresentative anecdotal information. An ill-conceived RFP may require only a statement of work, provider credentials, a budget, and disclosure of debarment.

Outcome information should play a larger role in the RFP process. A carefully written RFP for participant intervention should include the following:

> a statement of the desired outcomes;
>
> a statement regarding eligibility criteria for the subpopulation(s) to be served;
>
> an indication of minimum acceptable performance standards (in terms of outcomes) for each subgroup served. (In particular, **how will the independent effects of the proposed intervention be separated from antecedent, concurrent, and/or intervening effects of other variables in order to attribute outcomes or a portion thereof to the services provided?**);
>
> a request for documentation (in standardized format) that the bidder met performance standards for each targeted subgroup when delivering the proposed services in the past.

Where the RFP is designed to establish new services or programs, bidders will not have performance histories. The contracting party might not know what expected performance levels are reasonable nor have they a basis for forecasting variance in outcomes among subgroups. In such cases, bidders should be asked to address the following questions:

> *What outcomes would the bidder define as successful outcomes?*
>
> *What data sources should be tapped to document successful outcomes? How would the bidder propose calculating performance?*
>
> *To what performance standards on those measures is the bidder willing to be held accountable?*

On what basis are the bidder's performance promises made?

> documentation of performance by the bidder in delivering the proposed service to a different participant mix;
>
> documentation of bidder performance across the board for all services delivered;
>
> documentation of performance by other providers using the same approach and materials in serving the anticipated participant mix; or
>
> theory, assumptions and speculation.

Would the bidder be willing to enter into a performance-based agreement that includes penalties for failure to meet promised performance levels (perhaps offset with bonuses or incentives for exceeding them)?

If the proposal is for multiple years, will the bidder accept a contingency clause calling for termination of the agreement if, at specified intervals, promised performance levels are not met?

Bidders who demonstrate an understanding of the connection between proposed services and expected outcomes are more likely to meet specified goals and objectives. All other factors being equal, those having a solid basis for making performance promises should be given preference as should those willing to enter into performance-based agreements.

RFPs for pilot and demonstration programs often anticipate subsequent rounds of funding for program expansion and wider implementation. It is particularly tempting to invite proposals for "*exemplary programs.*" While proposed programs may be innovative, unprecedented, or experimental, evidence of performance should be required before subsequent rounds of funds are distributed for program expansion and/or wider scale adoption. Where awards are made in the absence of sound interim performance measures, ineffective programs may be perpetuated and emulated not on their merits but simply by circular reasoning. A successful bidder may use the fact that an "*exemplary program*" proposal was accepted in the first funding round as rhetorical evidence in subsequent proposals that the program or services are worthy of continued funding. In letting successive awards, those requesting proposals should build a performance evaluation process – relying on a predetermined follow-up design – into each interval in the funding cycle.

Where the proposed outcome measures coincide with those already calculated for other programs, contracting parties should set aside sufficient funds and arrange with the SOICC to be included in the automated follow-up system. This will ensure objectivity and standardization while eliminating any potential duplication of effort or excessive burdens on outcomes data providers.

APPENDIX VI

USING FOLLOW-UP DATA IN CAREER GUIDANCE SYSTEMS

Guidance systems act like a series of sequential filters leading a student or adult learner to distill the career pathway(s) which is (are) most likely to result in career success. The first two filters compare interest and aptitude inventories to a duties and task list and conditions of occupational employment. These comparisons are used to eliminate inappropriate options which fit neither the decision-maker's interests or aptitudes.

Once the list of options has been winnowed to a range of appropriate options, the next filter helps the decision-maker determine which offer the highest probability of suitable employment. **It is at this stage that follow-up improves the selection model**. Because occupational data are collected by worksite on the cohort that most recently exited the training pipeline, demand can be forecasted *by region for entry level workers*. This provides much more detailed and pertinent information than statewide forecasts for all levels of occupational employment (which combine entry level and senior incumbent workers). Having narrowed the range of options to those most likely to offer gainful employment, the list can be further reduced by using follow-up information to rank entry level wages and prospects for full time employment for each occupation.

Assume that the list after successive filters still contains more than one option. The next filter allows the decision-maker to estimate the amount of training required to enter each occupation. The first stage of this filter compares the decision-maker's current level of education and training to the competencies required for successful occupational employment. The filter generates a list of additional education and training to pursue. In the next stage, this filter tells the decision-maker which institution(s) in the region (if any) offer the requisite programs.

Assume that more than one institution in the region offers the required education and training. **Follow-Up helps in choosing among service providers by informing the decision-maker about the track histories of each program**: On average, how long did it take previous cohorts to complete the program? If I complete only a portion of the program, what kind of outcome can I expect? What percentage of program completers got jobs related to their training? How did the entered-employment wages compare for completers of competing programs? How well did the competing programs serve persons of my gender, ethnicity, or other shared characteristics which might effect employment opportunities? How do the long-term results compare (e.g., wage gains, job retention, and career advancement) among completers of competing programs? In a labor market that stresses lifelong learning, which program best prepared its completers to pursue additional education and training?

In addition to providing follow-up services, the SOICC is responsible for: automating a career information delivery system (Texas C.A.R.E.S.); developing and improving SOCRATES (the automated planning model); conducting Improved Career Decision-Making seminars; and producing and distributing occupational employment infor-mation. Efforts are coordinated across all these activities to ensure consistency in definitions and file structures. That way, relevant data can be transported between the automated systems. By using shared data in automated systems and publications, the information delivered to planners, administrators, counselors and students by the SOICC and its client agencies/programs is consistent.

Until the automated career information delivery system is perfected and installed across the state, researchers at each campus/training provider site are advised to share the information they receive about program effectiveness with recruiters and guidance counselors.

APPENDIX VII
COMMITTEE MEMBERSHIP LISTS

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APPENDIX VII (Continued)

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APPENDIX VIII (Continued)
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Kathy Benson, Information Services Division
Higher Education Coordinating Board

Lorraine Merrick, Dr. Mark Butler*, Judith Hetherly
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Karen Cornwell, Barbara Walters, Ted Brown
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Texas Department of Commerce

Leslie Geballe, Will Reece
Intergovernmental Relations
Texas Employment Commission

Phoebe Knauer, Sandy Gebhart
Information Release Division
Texas Employment Commission

Joanne Brown
Travel and Conferences
Texas Employment Commission

Lynda Rife, Cynthia Mugerauer, Susan Hadley and Cindy Geisman
Texas Council on Workforce & Economic Competitiveness

Additions to the Steering Committee

Dr. Mike Wolf*, Vice President, El Paso Community College
Dr. John Grable*, President, Brazosport College

* Indicates membership on the Steering Committee

APPENDIX VIII
BUDGET CLOSE OUT

SUBCONTRACTOR

(Included Contract #110 and Amendment)

PROJECT STAFF	Salary/ Fringes	Total	Reconcile Amount
Jim Reed, Project Dir.	$ 9,178	$ 9,178	$ 13,154
Judy Reed, Associate Dir.	4,145	4,145	7,690
Support (progamming)	2,157	2,157	3,194
Support (coding/keying/mail)	30,867	30,867	22,179
Subtotal		$46,347	$ 46,937
PROJECT STAFF TRAVEL			
Project Director/Associate Dir.		$ 5,150	$ 3,911
SUPPLIES		$10,270	$ 3,451
PRINTING/DUPLICATION		$ 3,439	$ 9,698
COMPUTER/PERIPHERAL SUPPORT		$10,744	$ 12,876
COMMUNICATIONS & POSTAGE		$21,061	$ 18,096
GRAPHICS & SURVEY PRODUCTION		$ 3,844	$ 4,886
DATA STORAGE MEDIA		$ 1,530	$ 2,530
ADMINISTRATIVE COSTS (5%)		$ 5,122	$ 5,122
TOTAL BUDGET		$107,507	$107,507

Annual Reconciliation Notes:

Because of billing procedures, some supplies were included in printing/duplication budget items. Additional personnel, computer, and data storage expenses were needed because of increased data and table maintenance responsibilities, data conversion, and other activities approved by subcontract manager. Shifts in funds from line items in budget approved by subcontract manager.

APPENDIX VIII (Continued)

GRANT RECIPIENT

Operating Budget[*]
1993-1994 Program Year

ANTICIPATED SOURCES OF FUNDS

	Subtotals	Totals
Tri-agency Contributions		$ 225,000
Coordinating Board	$ 75,000	
Texas Department of Commerce	75,000	
Texas Education Agency	75,000	
Program Income		14,000
Registration Fees:		
3 workshops @ $ 3,000	9,000	
1 statewide conference	5,000	
Processing Charges:	N.A. (off-budget)	cost recovery
TOTAL INCOME		**$ 239,000**

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[*] At time of print, closeout awaiting final bill from the Coordinating Board for data services.

PROPOSED EXPENDITURES

	Breakouts	Subtotals	Totals
Personnel and Related Expenses			$ 69,893
Salaries		$ 54,150	
Project Director (100%)	$ 41,160		
Data Analyst (33%)	12,990		
Fringe Benefits		15,743	
Project Director	12,348		
Data Analyst	3,395		
Travel and Related Expenses			16,700
Orientation Meeting in Austin 25 site committee members @ $ 200		5,000	
Steering Committee Meetings in Austin 10 members * 3 meeting @ $200		6,000	
Director: 3 site visits * 5 sites @ $250		3,750	
Director: 3 regional workshops @ $250		750	
Director: other presentations		1,200	
Postage, Communications and Supplies			6,000
Reproduction Costs			3,000
Administrative Overhead			5,900
SOICC overhead (1.7% of contract)		3,900	
½ of equipment for ½ time analyst		2,000	
Employer Survey Subcontract			107,507
Original Contract		101,927	
Amendment		5,580	
Conference/Workshop Expenses			14,000
3 regional workshops @ $ 3,000		9,000	
1 statewide conference		5,000	
THECB Processing, Programming and Hardware			15,000
TEC Record Matching Charges			1,000
Other Charges		N.A (off-budget)	cost recovery
TOTAL EXPENDITURES			**$ 239,000**

* At time of print, closeout awaiting final bill from the Coordinating Board for data services.

ENDNOTES

[1] Commission on the Skills of the National Workforce, *America's Choice: high skills or low wages!* (National Center on Education and the Economy; Rochester, NY: 1990).

[2] Ray Marshall and Marc Tucker, *Thinking for a Living* (Basic Books; New York City, New York: 1992).

[3] In computing rank order product moment correlation coefficients, economic data was available only for the six pilot districts within Metropolitan Statistical Areas. Data from the two smallest districts, Silsbee and Hereford, were deleted from the analysis.

[4] Statistical significance is indicated in terms of the probability (p) of making an judgment in rejecting the null hypothesis. Where $p < .10$, there is less than a 10% chance that the results could have been obtained in an absence of a relationship between the varialbes examined. The probability $p < .10$ could also be expressed as $p > .90$.

[5] Per capita income was available from the Bureau of Economic Analysis; median household income for each QWFP region from the Census Bureau. Wide dispersion around those medians rendered those figures incapable of capturing the tendencies of persons with comparable earnings to cluster in economically homogeneous communities or neighborhoods served by a school district or campus.

[6] Parental influence also effects recent graduates' choice of pathways. One would hypothesize that graduates having one or both parents with some college education would be more likely to pursue higher education. However, parents' educational attainment was not available in the seed records. If district data bases contain information about parents' education, program administrators are advised to test that hypothesis.

[7] The Coefficient of Specialization indicates the degree to which a particular kind of business or industry is concentrated in a geographic area.

$$\frac{\left(\text{regional SIC employment} / \text{total regional employment}\right)}{\left(\text{statewide SIC employment} / \text{total statewide employment}\right)}$$

[8] With a larger number of cases, it would be useful to run an analysis of variance or chi-square test on a crosstabulation of outcomes by gender and ethnicity using "economically disadvantagted" status as a control variable.

[9] More detailed analysis would involve interposing economic status, gender, ethnicity, and student intent variables as stistical controls on the relationship between graduation type and post-graduation outcomes.

[10] As defined in Perkins legislation.

[11] Minor discrepancies in spelling were ignored. Where last names matched, inversion of first name and middle initial or use of nicknames were ignored. Among females, if last names did not match, SSNs were assumed valid so long as the first name and middle initial matched – indicating a name change associated with a change in marital status.

[12] For want of a better term, "incidental" herein is used to denote students who take one or more career and technology education courses without regard to any coherent sequence, programmatic design, or intent to improve occupational specific employment opportunities. (Also known as "taking courses cafeteria style.") Incidental vocational course-takers may enroll in a single course for avocational reasons, to fill a requirement, or to sharpen a skill not related to a particular desired career path.

[13] In the CIP system, the last two digits of the eight digit course code may be dropped to indicate program enrollment. Successive deletion of training digits allows easy aggregation of data to department and division level categories.

[14] Baj and Trott of Northern Illinois University are currently funded by the DOL to compare traditional survey data to UI wage records in eleven states. While they have not yet released their findings, both researchers in private conversations with the System Director indicated that the findings made in Texas were entirely consistent with their observations in other states.

[15] Earnings of former JTPA participants overlap those for high school graduates, certificate holders and associate degree earners because there is a two year limit on eligiblity for Title IIA and Title III programs. Some Title IIA participants (economically disadvantaged adults) may enter the program without a high school diploma and, in the two year limitation, may obtain a GED; others who enter with at least a high school diploma may advance in two years to earn either a certificate or an associates degree. Title III participants (displaced workers) tend to enter with higher levels of prior education and are more likely to exit the program with some kind of postsecondary award. Becuase SDAs purchase off-the-shelf training from community and technical colleges for JTPA participants, these two columns do not represent unduplicated figures.

[16] Memorandum from Barbara Ann Farmer, Administrator for Regional Management, DOL Training nad Employment Information Notice No. 38-93 (Washington, DC: March 3, 1994), page 2.

GLOSSARY

CIP	Classification of Instructional Programs. A standardized coding system developed by the US Department of Education. The code assigned to a class can be truncated or collapsed in ascending order to represent program, department and division.
Coefficient of Specialization	A statistic indicating the degree to which industrial employment is concentrated in a geographic area relative to a larger, self-sustaining or independent geographic area such as a state or the nation.
Coordinating Board	Texas Higher Education Coordinating Board. The state's central agency for higher (postsecondary) education and is responsible for the administration of a proportionate share of federal Perkins dollars.
DOL	Department of Labor, the federal agency responsible for administering employment and training programs (including JTPA and education coordination), collecting employment data, and making employment forecasts.
DOT	*Dictionary of Occupational Titles*: a coding system for classifying occupational titles according to the type of work performed. Although it covers more titles than the OES system and provides more detailed analyses of the work performed, the DOT is not used to code current employment levels or in forecasting occupational employment demands.
ESL	English as a Second Language, a special populations category under the Perkins Act.
ESC	Education Service Center, any one of several offices (designated by region number) that provides technical assistance to local education agencies.
FICE	Federal Identification Code for Education: a standardized code for identifying education and training institutions certified to receive federal funds or to provide services to participants receiving federal assistance.
Dependent Variables	An event or phenomenon that needs to be explained. In the case of automated follow-up, outcomes constitute the dependent variables.
GPRA	Government Performance and Results Act of 1993 (Public Law 103-62).

Independent Variables	Background, antecedent or intervention/treatment information believed or hypothesized to have some capacity to explain variance in the dependent variable(s). In the case of automated follow-up, the information contained in the seed records and among the data elements extracted at the option of program administrators from an in-house management information system.
ISD	Independent School District, local education agencies across the state. (In some locations may be known as CSDs, "Consolidated School Districts.")
JSEC	Job Service Employer Committees; committees of employers formed in each TEC region to render advice about job service and employment research activities.
JTPA	Job Training Partnership Act (PL 97-300 amended in 1992 by PL 94-404) administered in Texas by the Texas Department of Commerce.
LEP	Limited English Proficiency: a special populations category under Perkins Act.
Match	A match occurs when a unique identifier is found in two or more linked data bases. Also known as a "hit."
Master Plan	State Master Plan for Career and Technology Education; a plan developed by the tri-agencies to improve the integration of workforce development programs; pre-dates the Strategic Plan.
NHMCC	North Harris/Montgomery County Community College, the first Texas institution of higher education to use record linkage techniques to identify labor market outcomes of its former students.
NOICC	National Occupational Information Coordinating Committee, largely responsible for the development of crosswalks between coding systems.
OES	Occupational Employment Statistics, a coding system used by the US Department of Labor and state employment service agencies in coding occupations and collecting information on staffing patterns and future occupational employment needs of employers. The JTPA system in Texas uses the OES coding system in its MIS.
$p <$	In statistics, the probability of making an erroneous judgment in accepting or rejecting the null hypothesis.

Perkins Act	Carl D. Perkins Vocational and Technical Education Act (PL 98-524 as amended by PL 100-392). In Texas, federal Perkins dollars are administered by the Texas Education Agency (secondary) and the Texas Higher Education Coordinating Board (postsecondary).
QWFP	Quality Work Force Planning; a network of regional planning committees formed with seed money from the tri-agencies to help integrate the delivery of career and technology education and training.
Right to Know	Student Right to Know Act and Campus Security Act of 1990, Public Law 101-542.
SACS	Southern Association of Colleges and Schools, a multi-state institution accrediting body.
SB 642	Senate Bill 642: The Texas Workforce and Economic Committee Act of 1993. This bill created the Texas Council on Workforce and Economic Competitiveness with a mandate to develop and integrated, comprehensive statewide follow-up system to gather information for the purpose of planning and evaluating publicly funded workforce development programs across the state.
Seed Record	Background information on a former student or participant including Social Security number, demographic information, program participation and/or completion status, certain special populations status. Such items constitute the principle independent variable used in disaggregating and explaining variance in outcomes.
SIC	Standard Industrial Classification used by the US Department of Labor and most state and local work force development entities to group firms into a hierarchical system based on similarity of products produced or services rendered.
SMA	Statistical Metropolitan Areas.
SOICC	The Texas State Occupational Information Coordinating Committee, follow-up grant recipient for Program Years 1992-93, 1993-94, and 1994-95; charged with responsibilities under Senate Bill 642 and the TCWEC's state strategic plan for developing and operating a comprehensive, statewide integrated follow-up system.

Special Populations	Subgroups identified for targeted services for programs using federal Perkins dollars (also known as "Special Pops"). In public education, these include students with limited English proficiency (LEP), bi-lingual and immigrant students and those for whom English is a Second Language (ESL), economically disadvantaged students, academically disadvantaged, pregnant teenagers or teenaged mothers, incarcerated, gender equity, and those classified as Special Education students.
Strategic Plan	State Strategic Plan for Workforce and Economic Competitiveness under development pursuant to mandates in Senate Bill 642 by a blue ribbon task force in collaboration with the TCWEC, TCWEC staff, and workforce development partner agencies.
TCWEC	Texas Council on Workforce and Economic Competitiveness, created under Senate Bill 642 to facilitate coordinated planning, budgeting, implementation and evaluation of the federally funded workforce development programs in Texas.
TDoC	Texas Department of Commerce. In Texas, with the exception of an 8% set aside for coordination, this agency is responsible for the administration of federal JTPA dollars.
TEA	Texas Education Agency. The state's central education agency for public education (K-12) and is responsible for the administration of a proportionate share of federal Perkins vocational dollars flowing to the state.
TEC	Texas Employment Commission; collects quarterly wage reports on workers covered under the Texas Unemployment Compensation Act; responsible for release of information on employment outcomes; also fiscal agent for the Texas SOICC.
THECB Student Record	All public institutions of higher education report enrollment data by Social Security number each semester/term for all academic and technical program students. This data base is used to identify which students tracked by the follow-up system are pursuing additional education.
Tri-Agencies	Prior to passage of Senate Bill 642, the cooperative workforce development efforts of TEA, the Coordinating Board and TDoC.
UI Wage Record	Unemployment Insurance quarterly reports used by the TEC to verify entitlement to benefit levels paid to claimants under the state's unemployment compensation act; covers approximately 97% of all workers in Texas.